THE JOURNAL

OF THE

OKLAHOMA STATE MEDICAL ASSOCIATION

VOLUME XXX McALESTER, OKLAHOMA, JANUARY, 1937 Number 1

A SYMPOSIUM
The Ketogenic Treatment of Bacilluria*

ANSON L. CLARK, M.D.

M. R. EVERETT, PH.D.
Professor of Biochemistry, University of Oklahoma, School of Medicine

MINARD F. JACOBS, M.D.

H. D. MOOR, M.D.
Professor of Bacteriology, University of Oklahoma, School of Medicine

MARJORIE AUDREY SEWELL, B.S.
Chief Dietician, University Hospital, Oklahoma City, Oklahoma

Dr. Clark:

Urology as one of the newer fields of specialization in medicine made a most brilliant record during its adolescent years. Embracing as it does both the surgical and medical branches of medicine, the major portion of this advance was on the surgical and diagnostic sides, the latter aided by many ingenious instruments enabling greater visualization of the urinary tract.

Until as recently as five years ago little advance in medical therapy had been made. Attempts by numerous pharmaceutical houses to displace the old standby, methenamine, had resulted in dyeing the urine almost any color in the rainbow with no appreciable effect in inhibiting the growth of organisms infecting the urinary tract.

Five years ago the ketogenic diet was first prescribed for a patient in an effort to control a most resistant recurrent infection of bladder and kidneys. During the previous fourteen months every type of therapy known at that time had been used to combat the infecting organism, without success. The ketogenic diet permanently eliminated the infection in twelve days. Since that time the result achieved in that one case has been the initiating source of many experiments and investigations. In an evaluation of my first two hundred cases while I was associated with Mayo Clinic, it was found that this treatment was successful in approximately two out of three instances where formerly other types of therapy as evaluated by Campbell, produced results in only one out of six cases. Helmholtz found that the ketogenic treatment was even more successful in children. Acidosis and ketosis are produced with greater ease in children because apparently they have very little glycogen supply in the liver. Acidosis is much more difficult to produce in adults.

Fuller of London then discovered that it was the beta-hydroxybutyric acid excreted in the urine by this altered dietary intake which inhibited the growth of the infecting organism. It had been recognized early that in addition to the change in diet, an increased acidity of the urine was an important factor in successful treatment. Several authors then reported numerous experiments to show that bacterial growth in the urinary tract would be inhibited by a concentration in the urine of 0.5 per cent beta-hydroxybutyric acid and an acidity of the urine of pH. 5.2.

At that point two years ago an evaluation of the treatment showed that the scope was limited. Many suffering from a pyelitis or cystitis were unable to obtain

*Read before the Genito-Urinary Section, Annual Meeting Oklahoma State Medical Association, Enid, April 7, 1936.

careful and exact dietetic supervision such as provided in hospitals or diet kitchens. Clark and Keltz suggested a simplified method of dietary regimen applicable to office practice, in which the food intake consisted largely of forty per cent cream and eggs. The drawback to this simplified method is the gastro-intestinal upset which accompanies such an abnormal dietary intake. However, the advantage is that the course of treatment is shortened and hence the expense involved both as to time of medical supervision and dietary cost is minimized.

Nesbit of Ann Arbor then suggested applying the acidosis and ketosis produced by a starvation diet, to the treatment of urinary tract infections. In a series of two hundred case histories he has shown remarkable results with a ketosis produced in this manner. The disadvantage of the starvation method is the length of time necessary to obtain a ketosis sufficient to achieve satisfactory results. At the state hospital where his suggestion is widely used, expense is not a controlling factor, but in a private office practice the economic consideration is of great importance. The advantage gained in the starvation ketosis is the comfort of the patient. Nesbit maintains that after the first forty-eight hours there is a little discomfort due to hunger.

So today, in combatting infections of the urinary tract, we have a simplified ketogenic diet, an elaborate ketogenic diet and a starvation ketogenic diet, each with its particular advantages but all producing results in medical urology hitherto not achieved.

Dr. Everett:

Dr. Clark and his associates have pointed out practical applications of the ketogenic diet of great interest to the biochemist. In considering infections and calculi of the urinary tract we must not neglect the role of the epithelial tissues which provide the medium for the invading organism. The metabolic response of these tissues to diet and medication is an integral part of the problem of bacteriostasis.

I have been interested in explanations advanced for the failure of the ketogenic diet in some cases and in the fact that certain patients will not develop the desired ketonuria. A number of organs are known to be concerned in the development of ketonuria. The liver is the primary ketoplastic center, but the kidney, pancreas, adrenal and pituitary glands are also involved. The liver ketogenesis varies individually and by species and is subject to the controlling influences of hormones, asphyxial states and disease. Hepatic ketogenesis results in the formation of acetoacetic acid, which is then transformed into the desired B-oxybutyric acid. Last year Edson[3] demonstrated that ketogenesis is markedly increased in the isolated liver by perfusing it with ammonium chloride. This substance not only increased the ketogenesis from fats; it also caused a synthesis of acetoacetic acid from acetic acid. To my mind, this provides an additional reason for the success of ammonium chloride when used as an adjuvant to the ketoplastic diet. Some have advocated the administration of pure acetoacetic or B-oxybutyric acids in place of the ketoplastic diet, but, aside from their expense, it has been shown that they give rise to no greater ketoneuria than can be produced by diet.[4]

The kidney is not a negligible ketonuric factor, for Snapper and Brunbaum[5] have shown that it destroys large amounts of B-oxybutyric and acetoacetic acids. In addition to this destruction, it has a way of excreting these substances irregularly. In recent years we have come to recognize the adrenal glands and the anterior lobe of the hypophysis as ketoplastic endocrine influences. Injected anterior pituitary hormone increases ketonuria on a high fat diet, but especially during starvation, when it may be increased many fold.[6] Funk claims that normal urine contains another ketoplastic hormone.[7]

Such physiological factors are no doubt concerned in the resistant clinical cases and their careful evaluation may lead to additional therapeutic advance. Dr. Clark has indicated that the modern therapeutic agents for urinary infections produce two common results, namely, ketonuria and aciduria, both of which he considers essential for the clinical control of the infection. I believe there is an unsuspected third factor, less obvious, but possibly important. Ketogenic treatment not only minimizes glucose oxidation, with its resultant ketosis; it also restricts drastically

the available supplies of carbohydrate in the tissues, including those of the genito-urinary tract. Many details of the metabolism of urinary epithelial tissues are obscure, but it is not difficult to visualize definite metabolic relations between these host tissues and the invading micro-organism. We are well acquainted with the encouragement provided to such bacteria by the carbohydrate-rich tissues of the diabetic. Many bacteria have a great preference for carbohydrate food and flourish upon it. Recent investigations[8] have shown that *escherichia coli*, the organism most responsive to the ketogenic diet, increases its growth more than three hundred per cent when glucose is added to its anaerobic medium. Under the same conditions, approximating those of the urinary tract, glucose greatly accelerates the basal metabolic rate, and presumably the vigor, of the micro-organism. The possibility that carbohydrate deprivation of the urinary epithelium is an important factor in the ketoplastic treatment of urinary infections should not be overlooked.

Dr. Moor:

The chemical agents employed in combatting infections are classified but the classification like practically all others is unsatisfactory. The terms disinfectant and antiseptic came into use before the nature and activities of bacteria were known. Today we classify these chemical agents as follows:

A disinfectant is a chemical agent which under certain conditions of time, temperature, ionization, concentration and environment frees from infection. The terms germicide and bactericide are synonymous.

An antiseptic is a chemical agent which under similar conditions opposes sepsis, putrefaction or decay by preventing or arresting the growth or action of micro-organisms. Bacteriostatic and preservative are synonymous with antiseptic.

A deoderant is supposed to merely mask odors but at the same time may act as a disinfectant or antiseptic. Because of this overlapping of action between the various classes there is much confusion in the use of these terms.

Experimental evidence to date indicates that the action of ketone bodies, especially beta-hydroxybutyric acid, on micro-organisms infecting the urinary tract is essentially bacteriostatic provided a sufficient degree of acidity is also present. It is impossible to draw any hard and fast line between the bactericidal and bacteriostatic action of chemicals. In general, pathogenic micro-organisms deprived of their power of reproduction cannot long endure in living tissue, hence a bacteriostatic agent will usually produce the same results clinically as will a bactericidal one. Theoretically of course a bactericidal agent produces results in a shorter time.

It is also true that there are certain species of pathogenic micro-organisms that will hibernate in living tissues for long periods of time. For example, Bacillus tuberculosis, Treponema pallida, and Neisseria gonorrhoea after lying dormant some times for years will suddenly acquire renewed life and activity. This will explain the recurrence of an infection that has been treated with bacteriostatic agents only.

Infection and the persistence of infection is dependent upon various factors such as the number and virulence of the micro-organisms invading the host, the external and internal defenses which the host is able to mobilize, the portal of entrance and a long list of predisposing causes such as age, race, heredity, occupation, social environment, etc.

I have followed Dr. Clark's work in connection with ketogenic diets with great interest. The Department of Bacteriology in the State University Medical School has been very happy to cooperate with Dr. Clark in carrying out bacteriological tests on urine obtained from individuals taking the ketogenic diet. The encouraging results obtained by Doctors Clark and Keltz with this form of treatment and the close correlation of their results with those of other recognized authorities certainly warrants its careful study by those in the medical profession vitally concerned.

Dr. Jacobs:

I am not a urologist, but a medical man. However, I have been interested in the use of a ketogenic diet not only in epilepsy but in the condition of bacilluria. I am confident that the advocacy of this diet by Clark and Helmholtz has been a definite forward step in treating this resistant

urinary infection. The literature now has many confirmatory reports of the success of this treatment.

It is a proven fact that the beta-hydroxybutyric acid is the bacteriostatic factor in the urine. However, ketosis alone is not sufficient to inhibit the growth of the bacilli, but an added factor of sufficient urinary acidity is necessary. It has been found that a hydrogen ion concentration of around 5.0 is essential. Ammonium chloride by mouth in divided doses of six grams daily has been a helpful adjunct in obtaining this acidity. The ammonia is presumably converted into urea so that actually hydrochloric acid is produced. These six grams of ammonium chloride furnish over 1000 cc. of 0.1 normal hydrochloric acid.

Patients often have difficulty with the diet, as nausea and vomiting are not infrequent, yet the results obtained more than compensate for this handicap. However, patients who already have impaired digestion such as accompanies gall bladder disease find the excessive fat intake almost impossible. Because of the marked gall bladder contraction that follows a fat meal I have often wondered if it might be possible to squeeze a stone from the gall bladder into the cystic or common duct.

There is another problem that remains to be solved and that is how can the obese patient be kept in ketosis. It is not infrequent to find that a fat patient having developed acidosis will slip right out of it even though the diet has been strictly followed. This may be due to the large glycogen supply in the liver of these individuals. In children, for instance, acidosis is easily produced, apparently because they have a small glycogen supply.

The cream and egg diet of Clark and Keltz is easily prescribed in the office but difficult to adhere to. I wonder if it would not be possible and practical to have a set of standardized diets in accurate household measures, so they would not have to be weighed, that could be given to the patient. Because there is less difficulty when a ketogenic diet is approached gradually, one could have the first diet contain 80-90 grams of carbohydrate and by changing the diet every three days gradually reduce the carbohydrate content to fifteen or twenty grams. This would take three or four diets and consume a longer period of time, yet might it not be worth while?

Mrs. Sewell:

The following examples of the different types of ketogenic diet may be of aid to those prescribing this type of therapy. In addition to the diets, it is of great importance that the instructions to the patient should be carefully followed.

ELABORATE KETOGENIC DIET

Diet consisting of large quantities of fat, minimal carbohydrate, and adequate protein. The plan is effective, as ketosis is produced, but the diet has its disadvantages in that the large amount of fat included makes it unpalatable, often severely nauseating the patient. Hospitalization for diet kitchen facilities is almost a necessity for obtaining results with this plan.

A sample day's menu, for a diet of a FA/G ratio of 4:1, follows:

Calories 2764, Protein 43, Fat 280, Carbohydrate 18

BREAKFAST
- Egg, fried—One
- Bacon—4 strips 6" long
- Bran Wafers—As desired
- Butter—2 tablespoons
- Heavy Whipping Cream—1/4 cup
- Coffee or Tea—If desired

LUNCH
- Soup { Heavy Whipping Cream—3/4 cup; Tomato—1/2 cup; Seasoning
- Salad { Hard Cooked Egg—One; on Lettuce Leaf—One; Oil Mayonnaise—2 tablespoons
- Bran Wafers—As desired
- Butter—2 tablespoons

DINNER
- Roast Pork—3"x4"x1/4"
- Creamed Cauliflower
  - Cauliflower—1/2 cup
  - Heavy Whipping Cream—1/4 cup
- Lettuce Salad—1/2 cup
- Oil Mayonnaise—2 tablespoons
- Bran Wafers—As desired
- Butter—2 tablespoons

SIMPLIFIED KETOGENIC DIET

In some cases where it is difficult to obtain a variety of foods, very satisfactory results have been obtained from the simple prescription of taking daily, *one and one-half pints of heavy whipping cream and six eggs.* The diet being so simple, the physician has no difficulty in explaining

it in his office, and the patient can easily follow it at home. The plan has the same drawback, however, as the Elaborate Ketogenic Diet, in that the patient often suffers from a gastro-intestinal upset.

Any combination of two eggs and one cup of cream may be made each meal. If desired, some cream may be saved from the meal to be used between meals with coffee or tea.

Following are simple suggestions for meals, including the necessary eggs and cream, for one day. Butter and seasoning may be used as desired to make the diet palatable:

Calories 2676, Protein 14, Fat 288, Carbohydrate 22, FA/G=4.5 to 1

BREAKFAST

Scrambled Eggs
Eggs—Two
Heavy Whipping Cream—3/4 cup
Bran Wafers—As desired
Heavy Whipping Cream—1/4 cup
Coffee or Tea—As desired

LUNCH

Poached Egg—One
Baked Custard or Custard Ice Cream
Egg—One
Heavy Whipping Cream—1 cup
Water—1/4 cup
Nutmeg and Saccharin—If desired
Bran Wafers—As desired

DINNER

Egg Omelet
Eggs—Two
Heavy Whipping Cream—1/2 cup
Bran Wafers—As desired
Iced Coffee
Coffee—As desired
Heavy Whipping Cream—1/2 cup

STARVATION KETOGENIC DIET

This diet eliminates the feeding of large quantities of fat given in the usual ketogenic diet. It consists of a short period of *underfeeding*, giving the same low carbohydrate and adequate protein as in the other diets, but allowing only enough fat to make the diet palatable. The patient thus uses his body fat to make up the deficit in calories, and ketosis results the same as in giving large quantities of food fat. This diet has the advantage of being more palatable and consequently easier for the patient to take.

A sample menu for a diet of this kind follows:

Calories 702, Protein 43, Fat 50, Carbohydrate 18

BREAKFAST

Orange—One-half of a small orange
Poached Egg—One
Crisp Bacon—Four strips 6" long
Bran Wafers—As desired
Butter—1 level teaspoon
Coffee or Tea—If desired

LUNCH

Spinach—1/2 cup
with
Hard Cooked Egg—One
Lettuce and Tomato Salad—1/2 cup
Mineral Oil Mayonnaise—If desired
Bran Wafers—As desired
Butter—1 level teaspoon
Whole Milk—1/2 cup

DINNER

Roast Beef—3" x 2" x 1/4"
String Beans—1/2 cup
Shredded Lettuce—1/2 cup
Mineral Oil Mayonnaise—If desired
Bran Wafers—As desired
Butter—1 level teaspoon
Tea—If desired

IMPORTANT INSTRUCTIONS

1. Eat no sugars or sweets of any kind.
2. Coffee, tea, condiments may be used as desired.
3. Bran wafers must have no food value.
4. Any three per cent vegetable may be used where vegetables are listed on diet.
5. Do not chew gum or tobacco. Smoking is permitted.
6. Water should be taken only in moderate amounts.
7. No cathartics are to be used, other than mineral oil or bitter cascara. Milk of magnesia or other sweet cathartics will cause failures. Take no medicine unless prescribed by the physician.

Dr. Clark (closing):

Experience in handling a patient for which the ketogenic treatment has been prescribed is absolutely essential to obtain satisfactory results. In nearly every instance, the patient will have considerable gastro-intestinal discomfort and upset. Assurance from the physician that this is not unusual and the knowledge by the physician as to how far it is advisable to force the treatment when these upsets occur is only acquired by experience. The necessary microscopic examinations of the urine and the chemical tests to determine the extent of the bacteriostatic effect pro-

duced by the diet have been explained in the other articles on this subject.

BIBLIOGRAPHY

1. Clark, A. L.: The American Journal of Surgery, September, 1935, Vol. 29, pp. 354 to 367.

2. Clark, A. L., and Keltz, B. F.: Journal of the American Medical Association, January 26, 1935, Vol. 104, pp. 289 to 291.

3. Edson, N. L.: Biochemical Journal, Vol. 29, p. 2082, 1935.

4. Butts, J. S.: Journal of Biological Chemistry, Vol. 105, p. 87, 1934.

5. Snapper, J., and Grunbaum, A.: Nederland Tijdschrift Geneeskunde, p. 2292, 1934.

6. Deuel, H. J., Grunewald, C. F., and Cutler, C.: Proceedings of Experimental Biology and Medicine, Vol. 31, p. 309, 1933.

7. Funk, C., Zefirow, P., and Funk, I. C.: Archives Internationales Pharmacodynamique, Vol. 49, p. 189, 1934.

8. Walker, H. H., Winslow, C. A., and Mooney, M. G.: Journal of General Physiology, Vol. 17, p. 349, 1934.

ORAL ROENTGENOLOGY*

EDWARD D. GREENBERGER, M.D.
McALESTER

Oral roentgenology and oral disease have received but little attention in the past by the general roentgenologist, general practitioner and surgeon. Most physicians admit their lack of interest in anything not grossly visible in front of the anterior pillars. This attitude is probably due to the insignificant place that oral diseases occupy in the curriculum of most medical colleges. The physician has always dissociated himself from denistry. It is well for us to recall occasionally a remark made by Dr. Charles Mayo: "Talking of the interdependence of medicine and dentistry is like talking of the interdependence of medicine and surgery or medicine and obstetrics. The practice of medicine includes dentistry and dentistry is a special branch of medicine."

This wide dissociation, unfortunately, exists also between the dental x-ray service and the general x-ray departments of all the larger hospitals. The interne or fellow in roentgenology completes his course of training in x-ray without knowing anything about radiodontia, or about the technic in taking x-rays of the teeth. I know this to be true in my case. When I was later placed in charge of roentgenology in a clinic where the doctors frequently asked for a dental check-up by x-ray, I was forced to take an interest in radiontia. And when some of the local dentists began to seek my opinion about some of their films, I was forced to take an authoritative stand in radiontia. By association with dentists experienced in dental roentgenology, I was able to get by very nicely. Very few of the dentists in practice today have received any instruction in taking or reading x-rays of the teeth, other than that received from their journals, post-graduate study, and experience. Only one dental school in the United States, the University of Pennsylvania, requires its graduates to demonstrate their knowledge of taking and reading dental films. Only one-third of the dentists in practice have their own x-ray outfits. Most dentists are restricted in the use of x-ray to the scope of the small dental film because of their limited training and the special construction of the dental outfit. The majority of dentists therefore expect the general roentgenologist to take an authoritative stand on oral roentgenology, and it is to our advantage to accept this position.

The most common and often the only lesion the general roentgenologist looks for or comments on, when reading dental films, is the presence or absence of periapical destruction. If we are to take our place in dental roentgenology and if we are concerned with the prevention of oral infection and diseases, we should look for more than translucent apical lesions in dental films. Caries, pyorrhea alveolaris or peri-odontoclosia, pulpless teeth, pulp degeneration and pulp stones, sclerosis of the roots, fractured teeth or broken crowns and retained roots should be reported to the physician or dentist and the patient

*Read before the Section on Dermatology and Radiology, Annual Meeting, Oklahoma State Medical Association, Enid, April 8, 1936.

then referred to the dentist for treatment. We should urge the removal of impacted and unerupted teeth when found, not only because such teeth are often the source of neuralgic pains and are factors in malocclusion of teeth, but because they frequently cause a chronic inflammatory reaction in the surrounding supporting tissues by acting as foreign bodies. The tissues around such teeth were proven by cultures to be carriers of pathogenic organisms in an investigation of more than six hundred cases. If the dental film reveals a congenital absence of a tooth, we should inform the patient or his physician of the importance of retaining the deciduous tooth. The importance of looking for, correcting, and preventing the above mentioned dental lesions is forcefully illustrated by the statistics recently published by the Dental Department of Mayo Clinic.[1] In their survey at the University of Minnesota in which the mouths of about 10,000 adults were examined, it was shown that twenty per cent of females and thirteen per cent of males had lost all their teeth at the age of forty. Forty-seven per cent had lost their first molars before the age of twenty years. In their survey of several hundred cases referred to the dental department routinely they found that:

1. Every other person had at least one pulpless or infected tooth.
2. Three-fourths had pyorrhea to an advanced stage.
3. Sixty per cent had carious teeth.
4. Retained roots were found in one of five patients; one in three in the edentulous patient.
5. Ten per cent had impacted teeth often associated with infection.

A word about technic. Quite a bit of skill and repetition is often required to produce dental films that do not show haziness or distortion or superimposed shadows, particularly in the examination of upper teeth. Recently, in the examination of the upper molars in a patient who had sustained a severe injury to the face, I made a diagnosis of fracture through an unerupted third molar. The dentist could find no suspicious signs of such lesion clinically. I re-rayed the patient, angulating my tube towards the orbit. The film now revealed a fracture through the maxilla and not an unerupted tooth.

All of you have encountered the problem in diagnosis in determining whether the translucent area at the apex of an upper molar is due to abscess, normal superimposed maxillary sinus, or a maxillary cyst. Lipiodol instillation into the maxillary sinus by direct injection or by the displacement method of Proetz, is sometimes required before a final diagnosis can be made. The number of dental films used should not be determined by the capacity of the film mount. Fourteen films is the minimum for a full set of teeth; more films when special studies are required. The occlusal film is often very helpful in obtaining a better orientation of the tooth or the lesion that is being examined to its surrounding structure. (Demonstration.)

A discussion of the importance and the use of the x-ray in the diagnosis of intra- and extra-oral lesions beyond the scope of the dental film, includes the following interesting subjects:

1. Soft Tissue Swelling.
2. Osteomyelitis of the Jaws.
3. Tumors of the Jaw.
4. Sialography.
5. Fractures.

SOFT TISSUE SWELLING

As already mentioned, the most common oral condition in which the physician seeks the aid of the roentgenologist and dentist is in the examination of the teeth as a possible source of infection, as in various arthritides, nephritis, neuritis, rheumatic fever, sinus infection, ocular infections, unknown fevers, and other systemic disturbances. The next most common condition in which the roentgenologist is called in consultation is in the determination of the nature or cause of the soft tissue swelling within and around the upper and lower jaws. Many physicians have the tendency to refer such patients immediately to their dentists. The good internist, however, gives such a case its due importance and considers the following possibilities:

A. General causes:
   1. Blood dyscrasias — myelogenous and lymphatic leukemia, agranulocytic angina, infectious mononucleosis.

2. Hodgkins Disease including lymphosarcoma.
3. Michulicz's Disease or syndrome.
4. Lymphatic tuberculosis.
5. Nephritic and cardiac lesions, allergic skin manifestations, trichinosis, that cause swelling of cheeks and eyes.
6. Metastatic cervical nodes from malignancy of esophagus, respiratory tract, stomach, uterus, etc.

B. Local causes:

1. Infection of the tonsils, ears, salivary glands with cervical enlargement.
2. Infection of nasal accessory sinuses.
3. Stomatitis, gingivitis and pyorrhea as the result of infection and:
   (a) metallic poisoning as mercury, arsenic, bismuth and lead;
   (b) deficiency diseases as pellagra, sprue, pernicious anemia;
   (c) oral localization of a skin lesion as lichen planus, erythema multiforme, pemphigus.
4. Localized skin infection as erysipelas, beginning carbuncle, cellulitis, herpes zoster.
5. Ludwig's Angina.
6. Mumps.
7. Thyro-glossal cyst.
8. Secondary to specific ulcers in mouth and jaw as actinomycosis, tuberculosis, syphilis.
9. Cysts and soft tissue tumors of the mouth as ranula, epulis, salivary gland cyst.
10. Epithelial tumors of salivary gland:
    (a) benign adenoma;
    (b) malignant adenoma;
    (c) mixed tumor, chiefly of the parotid.
11. Primary carcinoma of structures of mouth, sinuses, nasopharynx, with or without cervical metastases.
12. Bone tumors and infections.

The x-ray in many of the above lesions is of negative value. But how simplified this complex problem of diagnosis of the nature of soft tissue swelling becomes if the x-ray does disclose a salivary calculus, calcification of cervical gland, infected sinus, infection of the mastoid, infected teeth or bone changes of the jaw.

OSTEOMYELITIS

Osteomyelitis of the jaw is eighth in frequency of osteomyelitis in other parts of the body. Trauma, due to dental operations or external violence (fracture), are first in importance in etiology of osteomyelitis of the jaws. The procedure of curetting or packing a peri-apical abscess after the extraction of the involved tooth is a very frequent cause of osteomyelitis. A spontaneous extension of the infection from a peri-apical abscess into bone tissue of the jaw is uncommon. The hematogenous origin of osteomyelitis of the jaw occurs often enough to make us consider this source more often than we do.

The x-ray findings in osteomyelitis of the jaws are the same as in long bones. Prior to about the tenth day, x-ray is of negative value. After the tenth day of the infection, x-ray reveals irregular areas of necrosis or rarefaction and condensation, the amount of each depending on the acuteness or chronicity of the infection. Because of the thinness of the jaw bone, the inflammatory process often quickly finds a point of exit and drains often without operative interference.

In osteomyelitis of the maxilla in nurselings and infants, the course is modified by the fact that the maxilla of the infant is composed of a greater proportion of cancellous bone with numerous tooth buds, some of which lie close to the orbit. A diagnosis by means of x-ray is often difficult due to the normal translucent areas of the tooth buds. An intra-oral film is the most helpful. The clinical picture in most of these cases is characteristic. The infant becomes acutely ill, develops marked swelling of lids of one eye, swelling and softening of the upper gums and palate on the same side, and often purulent conjunctivitis and nasal discharge. Death occurs

in one-fourth of the cases. The course, otherwise, is as in the adult.

The complications of osteomyelitis or any infection of the jaw, particularly the maxilla, are conditions which every physician dreads. They make us realize the importance of proper treatment in lesions of the face and mouth. The list of such complications include phlebitis of facial veins with subsequent cavernous sinus thrombosis, meningitis, encephalitis, brain abscess, orbital abscess, empyema of antra, etc.

TUMORS OF THE JAW

I'd like to discuss oral tumors briefly from a roentgenological standpoint.

1. The first in importance and frequency is the large peri-apical abscess.
2. The next most frequent tumor is the granuloma, the sequel of acute peridontitis in which the intense inflammation has subsided with formation of a nodule of chronic granulation tissue. The tumor usually reaches to pea-size. X-ray shows the same translucent area at the apex of the tooth as in the apical abscess.
3. The third most frequent tumor is the dental cyst, which is really a cystic degeneration in a granuloma. These cysts expand the bone as they grow and may reach huge size. They are symptomless, slow growing tumors, occurring at any age and found most frequently about the bicuspids and molars. A characteristic roentgen finding of the dental cyst is that it expands about the apex and not around the crown as occurs in dentigenous cysts.
4. The adamantine epithelioma, next in frequency, is considered a true neoplasm. It arises from enamel organs, the usual site being around the molars. They occur at the age of the second dentition; they are very slow and painless in their growth. The tumor may be solid with small cystic areas or may be polycystic and attain huge size. The solid and more malignant type usually occurs in the upper jaw, the polycystic type usually in the lower jaw. The x-ray shows a central expansive bone lesion with clearly demarcated outline, solid, mono- or polycystic in appearance. The solid or monocystic adamantinoma can not be differentiated from other central tumors by x-ray. Single intensive x-ray irradiation to the tumor followed by radical excision is the accepted treatment.
5. The dentigenous cyst occurs in about one to thirty in frequency in oral bone tumors. It is the benign prototype of adamantine carcinoma. It is a cystic degeneration of enamel organ. It occurs when a tooth, corresponding to abortive enamel organ, fails to erupt, leaving a vacant space in alveolus. These tumors are also painless, slow growing and may reach huge size. X-ray reveals the non-erupted tooth or teeth, as many as two hundred, varying in size from a bit of enamel to a fully developed crown lying within the cystic cavity. The roentgen findings do not exclude giant cell tumor or adamantinoma. The cyst is easily removed at operation by stripping its epithelial lining.
6. The giant cell tumor presents the same characteristics as it does in the long bones of the body, *i. e.*, a central, clearly demarcated bone-expansive lesion, which, when large, reveals trabeculation. It may contain teeth and therefore x-ray does not differentiate it from the above tumors. X-ray therapy is of value as in giant cell tumors elsewhere, but the uncertainty of diagnosis makes us hesitate to use it entirely.
7. Odontoma is a rare lesion, occurring almost always in the lower jaw. It pears on the x-ray film as a solid tumor. It is composed of more or less formed teeth surrounded by a fibrous capsule.
8. Other primary bone tumors are very rare, as ossifying fibrous sarcoma, chondro-sarcoma, etc.
9. A common, very malignant tumor which we often forget in our classification of oral bone tumors, is cancer of the maxillary sinus. X-ray shows marked cloudiness in the antrum in early cases, bone destruction of surrounding structures in the

late cases. Early diagnosis is made by biopsy.

Another important group of oral bone tumors or bone lesions are those that occur secondary to local or distant malignancies or as a manifestation of some general osseous involvement as:

1. Local extension from oral malignancy.
2. Metastatic areas from a distant osteogenic sarcoma, from cancer of the prostate, etc.
3. Multiple osteitis fibrosa cystica, multiple myeloma.
4. Secondary to leukemic invasion, Gauche's disease, etc.
(Demonstration.)

SIALOGRAPHY

A phase of oral roentgenology which has received a good deal of attention lately by both dentists and surgeons is sialography, literally translated, meaning salivary picture. Technique is as follows: one cc. lipiodol is injected into Stenson's duct and lateral radiogram is immediately taken, head of patient being fully extended. Its chief uses are:[2]

1. To determine presence or absence of non-opaque calculi in Stenson's duct.
2. To determine pathology in the duct or any of its branches and alveoli.

X-ray studies show various stages in chronic parotitis:

First stage: Parotitis resulting from blood stream infection. X-ray of both sides reveals dilation of Stenson's ducts.

Second and third stages are chronic parotitis from infected foci in mouth. The stoma of Stenson's duct in these cases shows an angry granular stomatitis and pus exudes from stoma on pressure of parotid gland. Sialograms of both glands show slight but definite dilatation of smaller ducts.

Later stage: As a result of long standing chronic infection, the terminal ductiles are so dilated that they appear on x-ray as spheroidal spaces and they resemble perfectly the dilatation of terminal bronchioles in bronchiectasis of the lung.

(Demonstration.)

ROENTGENOLOGICAL CONSIDERATIONS OF FRACTURES OF JAWS, PARTICULARLY THE MANDIBLE

Fractures of the jaw are much more common than usually supposed. In relation to fractures of other bones of the body, they rank one to nine, *i. e.*, considering both the maxilla and mandible. The outstanding cause is still the blow from the fist, the frequency being fifty-five per cent as compared to ten per cent due to automobile, according to Cook County Hospital statistics. Dr. Donaldson in his survey of mandibular fractures at Mercy Hospital, Ann Arbor, Michigan, presents the following data on location of fractures:

A. Angle—Forty-four percent.
Mental Foramen—Thirty per cent.
Symphisis—Nine per cent.
Molar—Nine per cent.
Neck of Condyle—Seven per cent.
Condyloid Process—One per cent.

In the maxilla, the majority of fractures occur in region of the incisors and bicuspids.

B. Single Fractures—Sixty-eight per cent.
Double Fractures—Thirty-one per cent.
Triple Fractures—One per cent.

Of all the double fractures, seventy-seven per cent are of the mental foramen on one side and the angle at the opposite side. In view of the frequency of double fractures, it is surprising how often x-ray examinations are made of only one side.

The x-ray, of course, is a necessity in the correct management in any fracture of the jaw—to determine the location and type of fractures, to determine whether any infected tooth is in the line of fracture which may necessitate extraction to avoid an osteomyelitis. And after reduction of the fracture by wiring, or rubber bands, intraoral molds or splints, jaw casts, etc., to determine whether fragments are in opposition, whether teeth are in proper position, to note onset of infection, secondary involvement of tooth roots and sequestram formation, and to observe whether union is normal or delayed.

We all realize that surgical care of the jaw fractures is primarily the task of the

dentist and oral surgeon, and when attempted by others not versed in the care of the mouth and teeth or mechanics of mastication, the probability of obtaining a good result is extremely slight. Union of fragments is not the primary consideration in jaw fractures. Occlusion of the teeth is the criteria for good alignment of the fragments and often is a more exact guide than the x-ray film. In fractures through the angle and ascending ramus, for example, the x-ray may show malposition of the posterior fragment, but this is of little importance as long as the occlusion of the teeth is corrected. A good concise paper on surgical management of fractures is one written by Dr. Moonhead in May, 1934, issue of the *Journal of A. M. A.*

Concerning the length of immobilization of jaw fractures, most text books state three to five weeks. Dr. Dean, a surgeon dentist, states that forty-three days are required for the normal case, two to three times as long a period is required in those having systemic disturbances. The best criterion, however, is when the doctor believes good fibrous union to have occurred. Mechanical contrivances (wiring) continued longer promote additional resorption of bone. A roentgen examination subsequent to fixation merely shows the apposition of fragments and is usually not to be trusted in the early stage to determine the amount of union. Firm clinical union often precedes by several weeks any roentgen evidence of union. In this respect the healing of fractures of the jaw is dissimilar to healing of fractures in long bones.

(Demonstration.)

TECHNIQUE IN VISUALIZING FRACTURES OR TUMORS OF THE MANDIBLE:

1. Oblique view—Patient lying on table; head inclined downward on fifteen degree angle board, tube tilted from behind the shoulder.
2. Lateral view.
3. Vertex-chin position for an A. P. view of the lower jaw, or by the use of the occlusal film, for A. P. view of the upper jaw.
4. A. P. view—Nose and chin on plate, an important view to localize fractures of maxilla, zygoma, and orbits.
5. Oblique view—Nose, chin, zygoma position for maxilla fractures in region of the molars.
6. Stereoscopic lateral views.
7. An important technique, not used enough in fracture work is the intraoral technique, used chiefly to locate fractures at symphysis. An occlusal film is placed between the mandibular and maxillary teeth—patient on back, head lowered on incline, tube centered under chin and parallel to lower incisor teeth.
8. Another useful view used in locating fractures of the condyloid process is that used in x-ray of the mastoid. Patient is placed on fifteen degree angle board, lying on involved jaw, head up, tube focused just above opposite condyle. It is useful also in determining ankylosis of temporomandibular joint due to infection or following fracture of condyle. Films are taken with mouth open and closed.

CONCLUSION

The general roentgenologist has and is offered the opportunity to take the authoritative position in radiodontia if he would but take more interest in this field. The importance of early detection and correction of dental diseases has been stressed.

An outline of some of the many conditions that may be responsible for soft tissue swelling in and around the jaws was presented. The complexity in diagnosis of such conditions warrants the simple procedure of an x-ray examination in the hope of obtaining a positive finding.

Any infection around the jaws must be regarded with a good deal of respect because of the possible serious cerebral complications. Osteomyelitis, particularly of the maxilla, is therefore a serious problem. Trauma is the chief etiological factor.

In regard to central bone tumors of the jaw. Dental root abscess, granuloma and small dentigenous cyst can be differentiated from other tumors and often exactly identified by x-ray. Monocystic lesions larger than three cm. can not be differentiated by x-ray. A polycystic tumor may be caused by any of the central tumors, but most often by an adamantinoma or giant cell tumor.

Sialography is an interesting study that should be used more frequently by the general roentgenologist.

Lastly, in regard to fractures of the jaw. The good occlusion of the teeth is the criterion of a good reduction. The proper treatment of jaw fractures should therefore be in the hands of the dentist or oral surgeon. Clinical union of jaw fractures occurs long before roentgen evidence. The importance of obtaining good visualization of the entire jaw on both sides has been pointed out and the technique described.

REFERENCE

1. L. T. Austin, D.D.S.: Proceedings of the Staff Meetings of the Mayo Clinic, Wednesday, February 5, 1936.
2. Dr. Hobbs: Sialograms. A. J. Roentgenology, Vol. XXVI, May, 1932.
3. Dr. Frederick B. Moorehead: "Better Method of Treating Fractures of the Jaw." J. A. M. A., May, 19, 1934.
4. Richard F. C. Kegel: Central Tumors of the Lower Jaw. Journal of Radiology, February, 1931.

Mental Aspects of the Menopause*

COYNE H. CAMPBELL, M.D.
OKLAHOMA CITY

Gross errors in psychiatric diagnosis are apt to be made during the involutional period because of the traditional explanation of all symptoms ranging from insomnia and blushing, to hysteria and delusions of persecution, upon the magic sentence: "She's going through the change in life."

Consequently, an exhaustive clinical study of each case presenting mental symptoms at this period of life must be made. Careful studies of all organic systems must be carried out. Perhaps the most common illness to be erroneously diagnosed is general paresis. A review of sixty-one private cases revealed six cases of general paresis, which had been treated as "change of life cases" with sedatives, rest, and Theelin.

However, after all organic contributing factors such as exhaustion, metabolic disturbances, specific endocrine disorders, blood dyscrasias, constitutional and hereditary mental illness (dementia praecox and manic depressive insanity), avitaminosis, etc., have been excluded, a definite mental syndrome may be found present which we are inclined to attribute, although rather vaguely from a casual point of view, to be in some way associated with the menopause. This clinical mental syndrome occurs in both the artificial and natural climacterium. It is certainly an inconstant accompaniment of the menopause, being present in only a relatively small proportion of all women (and men) who must inevitably pass through this phase of life if they live long enough.

The symptoms listed below are those constituting the mental syndrome accompanying the menopause. When present, there are gradations of severity.

1. Insomnia.
2. Emotional instability — uncontrollable crying spells for which the patient seems to have no logical conscious reason.
3. Fatigue or rapid exhaustibility.
4. Loss of ambition—a feeling of futility.
5. Excessive worry—neurotic, or seemingly justifiable, over financial, domestic, and trivial matters.
6. Feeling of unreality.
7. Functional visceral symptoms—cardiac, gastro-intestinal, genito-urinary and neurological.
8. Phobias—fears of insanity, of crowds, of being alone, of some dreadful calamity.
9. Compulsions and obsessions. Self pity.
10. Hysterical phenomena—temper tantrums, jerking spells, asocial behavior trends.
11. Delusions, or justifiable suspicion of husband's marital infidelity.

*Read before a meeting of the Southwestern Oklahoma Medical Association.

It is remarkable nevertheless, how exhaustive the psychiatric study of actual domestic relationships must be in order to determine whether or not the idea of the patient is delusional.

12. Sexual impotency, frigidity, nymphomania, and inversions.
13. Constant muscular tension, inability to relax. Hot and cold flashes.
14. Occipital or suboccipital pain.
15. Mental depression, melancholia. Ideas of suicide and fears of suicide.
16. Definite personality changes, resulting in slovenliness, unsanitary personal habits, excessive gossiping, fabrication, meddlesomeness.

Perhaps other symptoms could be included. All, or only a few of the above named conditions may be present. It is noticed, however, that no mention of a true psychosis has been made. Hallucinations and delusions have not been included as symptoms of the menopausal mental syndrome. It is true that psychoses may have onset during the menopause, but I question the causal relationship.

Involutional melancholia is of course the classic psychosis mentioned, but psychiatrists have now generally agreed that it is merely a specific form of manic depressive insanity. Dementia praecox may also occur and be precipitated by the involutional environment.

Yet by far the major proportion of mental cases at the menopause comprise a combination of the symptoms outlined above, and really constitute that, which I should like to designate the "Menopausal Psychoneurosis."

I believe that the mental symptoms presented in this neurosis differ in no way from any other type of neurosis. They merely constitute the patient's reaction pattern to the change, which is occurring in her internal and external environment. Time does not permit me to relate clinical psychiatric evidence, because only exhaustive studies of individual personalities can prove this point. Careful analysis of case records, delineating the personality structure, invariably support this idea. The neurotic mental symptoms are merely a reaction of the total personality to the stress of reality. A study of the case will show that the patient since puberty, has reacted neurotically to environmental stress. It must be remembered that each person behaves somewhat neurotically when passing from one phase of life to another, from childhood to puberty, from puberty to adolescence, and from adolescence to adulthood. In the average person, adjustments to the changing situations are adequately made.

I do not believe that the endocrinologic concomitants of the menopause and involutional period bear any casual relationship to the mental aspects. It is true that the endocrine disturbances, *e. g.*, absence estrin, are present; but the reaction of the patient's total personality to these disturbances determines the nature of the mental symptoms.

"Change of life" or "menopause" is a diagnostic magic formula—a loose and motherly explanation of symptoms, surprisingly gratifying to the patient in many instances, with occasional effective therapeutic result. I have seen many women who were able to bear, with seeming pleasure, the epigastric distress, palpitation, crying spells, compulsive fears, headaches, etc., after her physician had spoken the magic explanation in an esoteric voice--"The change of life."

The patient's response to this is undoubtedly determined by a reliving of her pre-pubertal and pubertal period when her mother explained the malaise, backache, restlessness, and other symptoms, with the equally potent and oftimes whispered sentence, "You are about to menstruate."

Individuals passing from childhood to adulthood are usually protected by parental and financial support, but during the involutional period, this support is often absent, and they may have a more intense neurotic reaction in this, their first truly unassisted attempt at adjustment.

The psychic aspect of the menopause is minimized, both by physicians and psychiatrists. More attention should be directed toward improving the patient's mental attitude to the changing situation during the climacterium. The physician must construct for the patient a healthy attitude toward the new world. There is a lessening of driving forces in the individuals who are passing through the involutional

period. Major adjustments are demanded, and these often overweigh the adjustments encountered during adolescence.

The patient in the menopause with the symptoms outlined above, is more apt to respond to psychiatric treatment based upon the above principles than from any other form of therapy.

Treatment of this syndrome is therefore primarily psychiatric. This does not mean by a psychiatrist, but by the family physician who is able to study the environmental situation and render the proper suggestive therapy. Some of the more severe menopausal neuroses require the aid of a psychiatrist. The psychoses should, of course, be institutionalized.

Treatment must be directed toward any contributing organic complication. Endocrine therapy in the form of estrin (Theelin, Progynon, Amniotin), intramuscularly may be given as adjuncts, but are of doubtful value. Lugol's solution is often helpful in the cases similating hyperthyroidism. Sedatives, if properly used, are of value. But most important in the treatment of these cases is properly administered psychotherapy.

Severe Emotional Disturbance Considered as a Factor in the Etiology of Acute Pancreatitis*

W. P. Neilson, M.D.
ENID

The resistant tissues of the human body are incapable of meeting a more devastating force than that savage and destructive mechanism presented by acute pancreatitis. Its onset is often terrifically sudden and the damage it produces irreparable. A patient may arise in the morning feeling in the pink of health and before the day is done be struck down to the amazement of all concerned, by this stunning force.

It is an inflammatory disease of the pancreatic gland characterized by hemorrhagic necrosis and marked enlargement. The array of symptoms which it calls forth are as follows:

1. Acute and violent abdominal pain. (Usually in the epigastrium.)
2. Vomiting which is more or less continuous.
3. Vascular collapse:
   a. A fall in blood pressure.
   b. Cyanosis, with increase in pulse rate.
4. Sub-normal temperature.
5. Marked anxiety.
6. General collapse.

The ability to successfully diagnose and treat this condition is little better today than it was when this disease was first listed as a distinct entity.

In reviewing a great mass of case reports on this subject, one is appalled at the almost negligible number of cases which are correctly diagnosed before surgical intervention is resorted to. The mortality, regardless of the manner of treatment, is high; few report as low as forty per cent mortality, most writers on the subject report a mortality which ranges from sixty per cent to eighty per cent. In the so-called hyperacute cases it seems to make little difference just what type of treatment is instituted. In less severe cases, however, there is sufficient evidence that surgical interference is justifiable.

The etiological factors concerned are offered largely as theory. Generally writers sum all of them under one of the four heads which are as follows:

1. Contamination of the gland through obstruction of the common bile duct near the ampulla of vater with backing up of bile (supposedly infected)

into the pancreatic duct. This theory was first described by Dr. Opie.

2. Contamination with extra pancreatic fluid through the ducts of Wirsung and Santorini.
3. Infection through the lymphatics. This theory was first advanced by Klipfel.
4. Infection through the blood stream. This theory was first advanced by Kaufman.

The congestion caused by this sudden swelling and inflammation of the pancreas may cause death in one of two ways. If death occurs very suddenly it probably occurs from pressure of the enlarged gland upon the solar plexus; this produces neurogenic shock. In many instances, even in the so-called hyperacute pancreatitis, the patient survives the sudden danger of neurogenic shock but in a few hours succumbs to a toxic shock probably from absorption of the split-protein derivative of histamin. The blood stream quickly absorbs these pancreatic ferments. If this were not true the wide appearance of fat necrosis would not be found in distant fatty tissues.

We have known for a long while that the pancreas is of vital importance in conducting the chemical control of tissue changes. These tissue changes are unquestionably disconcerted when the bulk of pancreatic substances is disorganized as it undoubtedly is in this condition. The writer fully appreciates all opinions as they exist and believes there to be no question concerning the accuracy of opinions relative to the fatal results; but he does believe that there is another factor which in some cases, at least, can not be ruled out from an etiological standpoint. This factor is the effect of a severe emotional disturbance as it affects the functional process of the pancreas, as well as its associate system of glandular brothers.

Emotion is undoubtedly characterized by reflex reactions through the vague and sympathic systems. Often stimulation of these systems produces alternate vaso-constriction and vaso-dilatation as well as an increased function of the producing tissue which they enervate. In extreme emotion, action is exerted on the supra-renal gland. An excessive amount of supra-renalin further acts upon the sympathic nerves asserting a stimulus for excessive activity of other secretory glands which are likewise enervated. Both the supra-renal and pancreatic glands receive their nerve supply through these same nervous channels. Excessive activity of the pancreas may well be the result as excessive activity of the supra-renal is the result. Add this to the violent stimulation through the chemical route due to excessive stimulation of other secretive tissues; the actions are therefore nervous, chemical and circulatory; alternate vaso-constriction and vaso-dilatation seriously impairing the circulatory mechanism.

Often individuals die suddenly, comfortably seated in their homes, listening over the radio to exciting events such as baseball games; or deaths have taken place in grandstands at baseball games at the end of exciting plays conducted by the players. Falling into this class may well be placed certain cases of gastric crises.

Associated as they are by a common nervous network, the vital functional tissue of the body cannot be disassociated physiologically. Sufficient evidence is at hand in numerous instances which connect emotional upheaval with such reactions. As a matter of logic, therefore, why not add emotional imbalance to the other accepted etiological factors in the production of the acute pancreatitis. May I briefly recite the following case:

R. R., white male, age fifty-three years. This patient arose at the usual time in the morning and was feeling exceedingly well. He consistently stated, after repeatedly being asked, that his state of health, both remotely and immediately, had been most excellent. On the day which his illness began he was to act as pallbearer at a friend's funeral. This deceased individual had been closely associated with the patient in many ways and he was considerably upset over his death. The funeral was a largely attended church funeral and due to the illustrious life of the deceased, many glowing tributes were paid him. The patient attended and during the service he began to have a violent chill with light headedness and extreme nervousness. After the church services he was not allowed to proceed further with his part of the service but was taken home.

I called to see him. He was found to be in a very serious condition. He was com-

plaining of violent abdominal pain, not directly in the epigastrium but below the umbilicus in the mid line. His skin, lips, ears and nail beds were cyanosed. His pulse was 130 per minute and thready. His blood pressure was 100/80; temperature was 97.5 degrees Fahrenheit. He began to vomit and continued to vomit large quantities of thin, green colored fluid. In spite of all forms of stimulants his course was steadily down hill. His collapse became more prominent in the next few hours. His pulse became faster and of poor quality. His blood pressure dropped to 68/60, his temperature dropped to 95.5 degrees Farenheit and he continued to vomit and complained more severely of abdominal pain. His mental faculties were never cloudy, he had a pinched facies and was extremely anxious. He was subjected to an exploratory laparotomy. The pathology was found in the pancreatic gland. This gland was enlarged to about twice its normal size, it was inflamed, hard and hemorrhagic. The gall-bladder and ducts were distended. The gall-bladder was drained and two drains inserted directly into the pancreatic substance. He died about twelve hours following the surgery.

A second case which I should like briefly to mention does not come under the head of acute pancreatitis. But does, I believe demonstrate the effect of emotional upheaval upon the physiological balance of the pancreas.

This second case was that of a young man in excellent general health, as was shown by a very recent and thorough examination, which included an examination of his urine. This young man went to work for a railway company. He was given the job of repairing the underneath framework of a box car. While he was working under the box car a switch engine was routed on the wrong track and bumped into the car. This patient saw the train just before it hit, not with time enough left for him to get from under the car but in time for him to take a hold of some underlying rods. By a hold on these rods he was able to avert physical harm and was carried for several hundred feet. When the train stopped he got out from under the car and collapsed. He was taken to the hospital. There was found to be a large amount of sugar in his blood and urine and he was treated for diabetic coma. He aroused from his coma but even with insulin and a strictly scientific regime of treatment his diabetes was never brought under control and he died three months later.

SUMMARY

Connected as it is with the vital glandular tissue of the body, both through a common supply of nervous tissues and being subjected to the harmones of other glands of internal secretions, I do not believe that one can justifiably deny the factor that severe emotional upsets play an important part in the disfunctioning of the pancreatic gland.

Operative Treatment of Sterility in the Male

Francis R. Hagner, Washington, D. C. (Journal A. M. A., December 5, 1936), believes that the most frequent cause of sterility in the male is inflammatory occlusion of the epididymis or vas deferens and limits his remarks to its treatment. The endeavor to overcome the occlusion by an anastomosis of the vas deferens and the globus major offers the only chance of recovery. The author has never had a successful case following operation for sterility in which the patient has not had a history of bilateral epididymitis. There are two conditions that must be present for a successful result in sterility of this type: first, the vas must be patulous above the point of the anastomosis; second, the globus major, or the upper portion of the body of the epididymis, must contain live spermatozoa. A failure at one time, if live spermatozoa are present and if the vas is patulous, is not a contra-indication to a second operation. In some of his most successful results he has had a failure the first time, with a favorable outcome at the second operation. The time of the appearance of the spermatozoa varies. Re-operation is not recommended before a year has passed. Nearly all of the author's operations have been done by lateral anastomosis, except for a few rather atypical ones, and success has been obtained only in those cases in which silver wire was used as a suture. The operation, while tedious, is not dangerous to life. General anesthesia should be used. In order to avoid the formation of scar tissue no local infiltration should be used. The operation cannot compromise the function of an organ that has already proved functionless.

If They Could Talk, Council Seals Would Say:

"When you see one of us on a package of medicine or food, it means first of all that the manufacturer thought enough of the product to be willing to have it and his claims carefully examined by a board of critical, unbiased experts. . . . We're glad to tell you that this product was examined, that the manufacturer was willing to listen to criticisms and suggestions the Council made, that he signified his willingness to restrict his advertising claims to PROVED ones, and that he will keep the Council informed of any intended changes in product or claims. . . . There may be other similar products as good as this one, but when you see us on a package, YOU KNOW. Why guess, or why take someone's self-interested word? If the product is everything the manufacturer claims, why should he hesitate to submit it to the Council, for acceptance?"

The Duty of the Family Physician in the Presence of a Positive Tuberculin Test*

LEWIS J. MOORMAN, M.D.
OKLAHOMA CITY

A positive tuberculin test, particularly in the period of childhood or adolescence, places before the family physician the difficult task of carefully following a few of the knotty threads which help to make up the complicated fabric of human life.

He must realize that a positive reaction means that the tubercle bacillus has entered the human organism and has produced a pathological condition known as tuberculosis. In reality, a positive test warrants a diagnosis of tuberculosis. It is doubtful if we are justified in continuing to teach that there is a difference between infection and disease. There is a difference between disease which does not produce obvious symptoms and which never manifests demonstrable pathological changes during life, and the same disease which gives rise to the symptoms of toxemia with the demonstrable signs of gross pathology.

Infection with the tubercle bacillus carries a wide range of possibilities. The disease may never cause obvious symptoms or demonstrable pathology. It may, particularly in infancy, lead to the development of one of the acute forms of tuberculosis which usually, in a relatively short time, prove fatal. Generalized miliary tuberculosis, tuberculous meningitis and the acute pneumonic types of pulmonary tuberculosis are among the common forms. If the child with a positive tuberculin test lives to be three or four years of age without developing manifest progressive disease, even though the x-ray may show what we call the primary complex (a calcified or Ghon tubercle in the parenchyma of the lung with secondary involvement of tracheobronchial lymph nodes), we may reasonably anticipate that he will carry on through childhood without clinical manifestations of disease.

When he arrives at the age of puberty there seems to be an inexplicable susceptibility to active progressive disease either through endogenous or exogenous reinfection. Then follows the train of variable possibilities always accompanying manifest tuberculosis.

Time will not permit a detailed discussion of these possibilities. Suffice it to say that the individual with a positive tuberculin test faces all the possibilities inherent in the wide range of hematogenous clinicopathological manifestations from the relatively inert primary complex through mild, moderately severe, to overwhelming generalized tuberculosis; and from low-grade fibrotic bronchogenic lung lesions through progressive stages of caseo-ulcerative forms, to widespread bilateral multilobar involvement which so often precedes death.

What has been said emphasizes the grave responsibilities resting upon the family physician when he stands in the presence of a child exhibiting a positive tuberculin test. Obviously he must throw about such an individual every available safeguard. Time will not permit a discussion of management, but we must insist upon a full recognition of its importance.

A positive tuberculin test has other implications and places upon the family physician other obligations. Having discharged his duty with reference to the individual manifesting the evidence of infection, he must consider the probable source of infection. Infection with the tubercle bacillus means contact with the tubercle bacillus. This usually means intimate contact with some one who has open tuberculosis. Naturally some one in the home must be considered the most probable source of infection. A negative family history is of little importance. Each member of the family, including relatives, servants and others who may reside in the home, should have a tuberculin test; and every one exhibiting a positive test should have a thorough examination, including an

*Address at Post-Graduate Course on Tuberculosis at Tulsa, September 29, 1936.

acceptable x-ray of the chest. Any member of the household manifesting symptoms or signs of pulmonary disease should be examined even though the tuberculin test is negative. Repeated sputum examinations should be made in suspected cases where sputum is available. Accepting a single negative sputum examination as final often leads to disaster.

If such a searching investigation fails to reveal the source of infection in the home, we must consider the possibility of contact with tuberculous teachers, neighbors, or visiting friends and relatives. Finally, hand to mouth infection must be considered. The baby on the floor, the child playing jacks or marbles on the street, may easily make contact with tubercle bacilli which have been deposited there by someone suffering from open tuberculosis. Occupants of the home may carry the tubercle bacilli on their feet or they may be carried in by dogs and cats. Contaminated food may constitute another source of hand to mouth infection.

Thanks to those who have instituted the wise handling of dairy herds in this country, and the added precaution of pasteurization of milk before consumption, we see relatively little bovine tuberculosis in the United States. However, we must not forget the possibility of infection from undiscovered tuberculous cows privately owned or in dairy herds.

We must admit that the execution of the proposed program is often difficult. Nevertheless, the obligation rests squarely upon the shoulders of the physician who discovers a positive tuberculin test. Fortunately for those physicians who may not be interested, or who may not desire to carry out such a program, the aid of specialists or voluntary and public health agencies in the field of tuberculosis may be secured. The same sources of service may be recommended to the physicians who are interested in executing the program but feel the need of help with certain phases of the examination.

(The above discussion was supplemented by the history of family groups and the exhibition of x-rays showing family infection.)

Supra Renal Denervation for Malignant Hypertension

R. Q. Atchley, M.D.
TULSA

According to White the first reference to the involuntary nervous system was made by Galen in the second century. He called it the "reinforcers to the nerves."

The various terms as sympathetic, ganglionic, autonomic and vegetative have been applied since.

Kuntz states that Winslow spoke of the sympathetic nervous system in 1732 and that the term vegetative was applied in 1800 by Bichat. Gaskell added the divisions as cranial thoraco-lumbar and sacral in 1886.

Langley and Dickinson added to the general knowledge in 1889 by discovering that nicotin could be used to determine relationship between nerve fiber and nerve cell.

Langley is responsible for the word autonomic, which seems to be the most universally used term.

Many works epochal in character have been published in recent years by great students such as Lerich in Strassburg, Germany, White, Kuntz, Gaskell, Lampton, Ross and Crile. The latter viewing from a somewhat different angle.

Surgery of the autonomic nervous system is a more recent development when about ten years ago classics were written on the relief of angina pectoris.

Since then many students have entered the field to broaden our knowledge and have opened a very promising and valuable division of surgery. It is hoped that

heretofore baffling problems can be solved.

The purpose of this paper is to bring to your attention today a procedure that may help to solve a problem that heretofore has been followed closely by great men and with varying results: that of denervation of the supra renal gland for relief of malignant hypertension. I do not and can not show a series of cases, but hope to provoke study among men who are hungry for new knowledge that may help to solve this problem.

I also am not proposing to write or advocate that the procedure I am about to describe is the final chapter or complete solution to the great problem of malignant hypertension, but I do propose to show you a case that I think was certainly salvaged and greatly benefitted by the procedure. This may, according to Crile, be a small per cent of cases among many, but if only a very small per cent can be placed back at their livelihoods so they can pursue their position among people, it is worth while.

The etiology of malignant hypertension, of course, is not definitely known, and it is because of this fact and lack of knowledge that the great research men have placed themselves at the task of its solution.

The long known pressor effect principle of adrenalin has been the cue to study its relationship to the autonomic nervous system and to probably solve the problems of malignant hypertension in younger individuals.

Dr. Crile states that the supra renal gland occupies the driver's seat in relation to the autonomic nervous system. As stated above, the young patient under forty or thereabout is the one we are most interested in. He has his hypertension after the usual methods of eliminating foci of infections, etc., have been exhausted.

Kieth and Wagner state that a young individual can not survive usually more than two years when their diastolic is one hundred and thirty or above. These cases have, as a rule, normal vascular systems or very nearly so. Their vasomotor centers according to Monokor are hyperirritable, evidenced nearly always by being highly emotional.

The older individuals who show the usual kidney, heart and vascular changes would reap very little benefit from a procedure of this kind. It will, however, prolong life to some extent and even this small ray of hope is gladly accepted by some as life is sweet to them.

A hurried review of the anatomy of the supra renal nerve supply would seem apropos in a paper of this kind.

As you will recall, the supply of nerves to the gland is divided into the intrinsic and extrinsic, the latter derived largely from the coeliac ganglion and plexus, but does receive fibers from the phrenic plexus above and the renal below. They enter the gland as a rule through the hilus. Demonstrations prove that thirty to forty fibers have to do with the supra renal gland upon entering the gland at the hilus as usually they pass to the medulla, uniting with the small ganglion there. A minority amount go to the cortex and capsule. The vagus and phrenic nerves contribute some fibers to the picture. Little is known regarding the nervous influence relative to function of the cortex.

The detail of the anatomy of the nerves in the gland would only prolong this paper and be of little value relative to the subject at hand.

The physiology of the adrenal system is interesting here as it relates to hypertension.

Crile states that there are thirty or forty sympathetic nerves supplying the adrenal gland coming directly from the coeliac ganglion and as you will recall, they in turn come from the coeliac plexus.

It is these efferent nerve fibers that connect the supra renal gland and the coeliac plexus that we sever in a denervation. As stated above, the Pressor principle of the gland has long been known, but why the disturbed physiology?

Kuntz states that muscular activity and emotional excitement increase the output of adrenalin, while splanchnic stimulation increases the outflow of blood from the gland.

It is logical to believe that excessive long over-stimulation would produce a condition similar to malignant hypertension. Crile states that young individuals who are nervous and heart conscious with hypertension show an endurance increase, returning to work after denervation.

Malignant hypertension must be differentiated from benign or essential hypertension forms.

It is characterized by occurring in young individuals with no previous demonstrable vascular disease or changes and running a rapidly fatal course.

It is because of these very alarming factors that we attempt to disconnect or denervate the supra renal gland, hoping that function plays a great role in its production. Some cases will run a systolic of 200 mm. and a diastolic well over 100 mm.

Changes in the retina are very common. The patients are subject to emotional excitement and frequently give a history of having had a severe nervous shock or some continuous nervous irritation as fear, grief or financial worries. The depression has been the father of many such conditions.

Vascular hypertension differentiates itself by its name.

Hyperthyroidism is occasionally a concomitant disease but some writers think that denervation is doubly indicated.

It is the agreed hopelessness of malignant hypertension that has stimulated much thought and research toward its elimination or cure. Any degree of success is always gladly accepted by the patient as they are young individuals with the future dark without relief. Medical treatment has been of little avail.

Frequent tappings have been obviously palliative.

The control of hypertension by sympathetic denervation was first suggested by Danielopolu in 1929 and Brunning in 1923.

Sympathectomies of various types have been done with various, but interesting results. No attempt will be made to describe the various methods here.

Adson and Brown severed the anterior thoracic roots from the sixth thoracic to the second lumbar hoping to stop the vasomotor outflow below the diaphragm. This method, of course, denervated the supra renal glands, but gave the large abdomen from muscular relaxation, gladly accepted many times by the patient for relief.

Denervation of the gland itself would at least seem to be an operation that would promise results since it occupies such an important position relative to pressure in the autonomic nervous system.

Dr. Crile states that propably not enough results can be obtained to justify the denervation. It seems, though, even a small per cent of results would be worth while.

It should at least spur us on to do all we can to accomplish results. The technique of supra renal denervation is carried out through a kidney approach incision, avoiding the twelfth, thoracic, iliohypogastric and ilio-inguinal nerves.

The latissimus dorsi muscle fibers are cut across down to the serratus posticus and external oblique.

The latter fibers can be split usually, exposing the lumbar fascia and internal oblique, which are cut through, exposing the perirenal fat. The kidney can be felt through the fat and is retracted downward by retractors. The pleura and peritoneum are close neighbors and must be avoided.

The peri adrenal fat is now identified and incised, identifying the gland by palpation. A careful hand dissection is done by inserting the hand into the wound, severing the thread-like nerves as well as can be accomplished. Then the gland is elevated by special fork-like retractors and the remaining sympathetic nerves severed by direct vision. Manipulation of the gland will raise the blood pressure sometimes as much as twenty points both systolic and diastolic.

The wound is closed after placing two cigarette drains. Occasionally the wound is washed out with saline to remove all expressed adrenalin to prevent post-operative excessive elevation. The left side is usually done first because it is anatomically the easiest. The right side in some cases can be done in six to ten days. Sometimes the patient is allowed to go home for three to six months, so the result can be estimated.

BIBLIOGRAPHY

1. Adson, A. W., and Brown. G. E.: "Thrombo Angeitis Obliterans." Journal A. M. A., 1932, XCIX, 529.
2. Crile, George W.: "Diseases Peculiar to Civilized Man." 1934. McMillan & Co., New York, N. Y.
3. Lerichs, Strassburg, Germany.
4. Kuntz, Albert: "The Autonomic Nervous System." 1934. Lea & Febiger, Philadelphia, Pa.
5. Gaskell, W. H.: "On the Structure Distribution and Function of the Nerves Which Innervate the Visceral and Vascular Systems." 1886. Jour. Physiol. 71-81.
6. Langley, J. N.: "On the Origin from the Spinal Cord of the Cervical and Upper Thoracic Sympathetic Fibers with Some Observations on Gray and White Rami Communicantes." 1892. Trans. Roy. Soc., London, 183, Series B, 85.
7. Ross, J.: "On the Segmental Distribution of Sensory Disorders." Brain, 1887, X, 333.
8. White, Jas. C.: "The Autonomic Nervous System." McMillan & Co., New York, N. Y.

THE JOURNAL
OF THE
Oklahoma State Medical Association

Issued Monthly at McAlester, Oklahoma, under direction of the Council.

VOL. XXX JANUARY, 1937 Number 1

DR. L. S. WILLOUR.....Editor-in-Chief
McAlester, Oklahoma

DR. T. H. McCARLEY.....Associate Editor
McAlester, Oklahoma

Entered at the Post Office at McAlester, Oklahoma, as second-class matter under the act of March 3rd, 1879.

This is the official Journal of the Oklahoma State Medical Association. All communications should be addressed to The Journal of the Oklahoma State Medical Association, McAlester Clinic, McAlester, Oklahoma. $4.00 per year; 40c per copy.

The editorial department is not responsible for the opinions expressed in the original articles of contributors.

Reprints of original articles will be supplied at actual cost provided request for them is attached to manuscripts or made in sufficient time before publication.

Articles sent this Journal for publication and all those read at the annual meetings of the State Association are the sole property of this Journal. The Journal relies on each individual contributor's strict adherence to this well-known rule of medical journalism. In the event an article sent this Journal for publication is published before appearance in The Journal the manuscript will be returned to the writer.

Failure to receive The Journal should call for immediate notification of the Editor, McAlester Clinic, McAlester, Oklahoma.

Local news of possible interest to the medical profession, notes on removals, changes of addresses, births, deaths and weddings will be gratefully received.

Advertising of articles, drugs or compounds unapproved by the Council on Pharmacy of the A. M. A., will not be accepted.

Advertising rates will be supplied on application.

It is suggested that wherever possible members of the State Association should patronize our advertisers in preference to others as a matter of fair reciprocity.

Contents fully protected by copyright.

Printed by News-Capital Company, McAlester.

EDITORIAL

WHAT OF THE PROGRAM?

The first of this New Year it is well to direct our attention to some of the business affairs of the Association and observe just how we are progressing with the program which was outlined by the House of Delegates at Enid.

This program proposed a considerable undertaking and for the first time in our history called for the undivided support of the membership in accomplishing a great advance in public relations and legislation. It was adopted by a unanimous vote of the House. Not a single delegate, not one representative from a component County Society, voted against this measure and it appeared that unanimous support could be expected, but it seems now that these delegates did not well represent their constituents as only about forty-five per cent of the membership has shown a willingness to co-operate. Now there is a question as to whether this is an attitude of apathy or revolt. Does this other fifty-five per cent wish the program carried out expecting those contributing to bear their share of the burden, or are they opposed to the program?

It is possible to accomplish much with the set up that has been perfected by your Committee on Public Relations if the membership rallies to their support; if this is not done, all their efforts will come to naught. It is for the membership to decide and their decision means much. Shall we have an amended Medical Practice Act and a Basic Science Law? Is it our duty to protect the people of this state with legislation that will guarantee to them the proper education of those who practice the healing art? If so we must be behind this program to a man. Is it our duty to organized medicine to clean our own house? If so we need badly the proposed amendments to the Medical Practice Act and we cannot well expect the respect of the laity unless we keep the practice of medicine on a high plane and not allow it to become commercialized.

These are the questions before us today and if each county will meet its allotment, pay the annual dues of $8.00 promptly and see to it that your members of the Senate and House are familiar with the facts we may expect to accomplish all the things that the people of Oklahoma need for their protection in the way of medical legislation.

AN URGENT APPEAL

To All Doctors of the State Medical Association of Oklahoma:

To continue our Legislative program into anything like a successful conclusion we must have more funds.

Your committee has traveled some ten thousand miles and spent some fifty or sixty days of their time, each without compensation, and at the same time have spent their own money to forward this program, and it looks to me as if the vari-

ous County Societies and their component members would appreciate this enough to furnish the necessary funds to carry on this vital fight, or by some means designate to us that our services are no longer desirable and that you prefer to turn the practice of medicine over to the men who are outside of organized medicine, and the cults.

Let me tell you, gentlemen, I consider this the most momentous fight that has ever faced organized medicine in the entire nation and that our welfare and the future of organized medicine depends almost entirely on the outcome of this fight.

H. K. SPEED, M.D., Chairman,
Legislative Committee,
Oklahoma State Medical Assn.

Sayre, Okla., December 26, 1936.

Editorial Notes—Personal and General

At the request of the Surgeon General of the U. S. Public Health Department, the following committee has been appointed by the President, Dr. George R. Osborn, to assist in the syphilis control program which is being sponsored by the Public Health Department:

DOCTORS DAVID V. HUDSON, Chairman, Tulsa; SHADE D. NEELY, Muskogee; ROBERT AIKEN, Oklahoma City.

DR. LEA A. RIELY, Oklahoma City, was elected second Vice-President of the Southern Medical Association at its meeting in November.

DR. C. S. WALLACE, Holdenville, has been appointed County Health Superintendent of Hughes County.

DR. R. B. FORD, Oklahoma City, announces the opening of his office, for the practice of surgery, at 1113 Medical Arts Building.

DR. J. WILLIAM FINCH, formerly of Sentinel, announces the removal of his offices to Hobart where he will occupy the offices of the late Dr. H. C. Lloyd.

DR. J. SAMUEL BINKLEY, formerly of Oklahoma City, is now connected with the Memorial Hospital of New York for Treatment of Cancer and Allied Diseases.

DR. BEN H. COOLEY, Norman, has been elected Secretary-Treasurer of the Southern Oklahoma Medical Association. DR. G. L. JOHNSON, Pauls Valley, was elected President.

DR. G. S. BARGER, Purcell, is doing Army medical service at Ft. Bliss.

DR. FLOYD L. WATERS, formerly of Oklahoma City, announces the opening of offices in Hugo.

DR. T. W. STALLINGS announces the opening of an Eye, Ear, Nose and Throat Clinic at 724 South Elgin, Tulsa.

LEGISLATIVE FUND

County	Allotment	Amt. Paid
Adair	$ 40.00	
Alfalfa	70.00	
Atoka-Coal	30.00	$ 30.00
Beckham	140.00	130.00
Blaine	90.00	
Bryan	240.00	170.00
Caddo	240.00	90.00
Canadian	230.00	75.00
Carter	260.00	130.00
Cherokee	30.00	
Choctaw	70.00	60.00
Cleveland	270.00	
Comanche	190.00	
Cotton	90.00	
Craig	150.00	80.00
Creek	330.00	185.00
Custer	230.00	210.00
Garfield	420.00	250.00
Garvin	150.00	150.00
Grady	230.00	160.00
Grant	40.00	
Greer	110.00	
Harmon	80.00	
Haskell	60.00	40.00
Hughes	170.00	140.00
Jackson	160.00	120.00
Jefferson	110.00	
Johnston	10.00	
Kay	320.00	290.00
Kingfisher	90.00	
Kiowa	170.00	
Latimer	40.00	
LeFlore	160.00	100.00
Lincoln	150.00	50.00
Logan	200.00	100.00
Major	30.00	
Marshall	50.00	
Mayes	110.00	10.00
McClain	60.00	
McCurtain	70.00	
McIntosh	60.00	60.00
Murray	110.00	
Muskogee	520.00	60.00
Noble	40.00	
Nowata	50.00	50.00
Okfuskee	150.00	100.00
Oklahoma	2740.00	1065.00
Okmulgee	280.00	210.00
Osage	220.00	220.00
Ottawa	310.00	
Pawnee	100.00	90.00
Payne	250.00	160.00
Pittsburg	350.00	180.00
Pontotoc	300.00	300.00
Pottawatomie	330.00	160.00
Pushmataha	75.00	30.00
Rogers	120.00	60.00
Seminole	320.00	110.00
Sequoyah	10.00	10.00
Stephens	220.00	60.00
Texas	50.00	20.00
Tillman	100.00	110.00
Tulsa	1980.00	
Wagoner	40.00	40.00
Washington	250.00	240.00
Washita	120.00	
Woods	190.00	140.00
Woodward	260.00	150.00

NOTE—Corrections and additions to the above list will be appreciated.

News of the County Medical Societies

COTTON COUNTY MEDICAL SOCIETY met in December and the following officers were elected for 1937: Dr. Mollie F. Scism, Walters, president; Dr. Howard McKinney, Temple, vice-president; and Dr. F. G. Stephens, Temple, secretary-treasurer.

At a regular meeting of the GARVIN COUNTY MEDICAL SOCIETY Wednesday evening, December 16th, 1936, the following officers were elected for 1937: Dr. M. E. Robberson, Jr., Wynnewood, president; Dr. A. H. Shi, Stratford, vice-president; Dr. John R. Callaway, Pauls Valley, secretary-treasurer; and Dr. Hugh Monroe, Lindsay, censor. Dr. John R. Callaway, Pauls Valley, was elected delegate to the state meeting, Dr. Edward Shirley, Pauls Valley, alternate.

BRYAN COUNTY MEDICAL SOCIETY met December 17th and officers as follows were elected: Dr. G. M. Rushing, Durant, president; Dr. P. L. Cain, Albany, vice-president; Dr. Jas. L. Shuler, Durant, secretary; and Dr. A. J. Wells, Caddo, censor. Dr. Jas. L. Shuler is delegate to the state meeting. Dr. W. K. Haynie of Durant, was elected to membership.

WAGONER COUNTY MEDICAL SOCIETY met December 29, 1936, and the following officers were elected: Dr. S. R. Bates, president; Dr. H. K. Riddle, vice-president; Dr. John D. Leonard, secretary-treasurer; Dr. John D. Leonard, delegate, and Dr. H. K Riddle, alternate

---

OSAGE COUNTY MEDICAL SOCIETY met December 7, 1936, and the following officers were elected for the year 1937: Dr. R. A. Baylor, Fairfax, president; Dr. R. O. Smith, Hominy, vice-president; Dr. G. K. Hemphill, Pawhuska, secretary-treasurer; Dr. Roscoe Walker, Pawhuska, censor, 1937; Dr. R. O. Smith, Hominy, censor, 1937.

BECKHAM COUNTY MEDICAL SOCIETY held an election of officers Tuesday, December 8th, as follows: Dr. E. S. Kilpatrick, Elk City, president; Dr. P. J. Devanney, Sayre, vice-president; and Dr. H. K. Speed, Jr., Sayre, secretary-treasurer.

OTTAWA COUNTY MEDICAL SOCIETY had its annual banquet Thursday night, December 17th, 1936, at the Miami Baptist Hospital. There was an election of officers for the ensuing year as follows: Dr. Richard Russell, Picher, president; Dr. J. W. Craig, Miami, Dr. Benj. W. Ralston, Commerce, and Dr. W. B. Smith, Fairland, vice-presidents; and Dr. W. G. Chesnut, Miami, secretary-treasurer. The Board of Censors is composed of past presidents, Dr. M. M. DeArman, Miami, Dr. A. M. Cooter, Miami, and Dr. J. S. Jacoby, Commerce.

The annual meeting of the OKMULGEE-OKFUSKEE MEDICAL SOCIETY was held at the Belmont hotel, Okmulgee, December 21, 1936. Speakers were Dr. J. E. McDonald, Tulsa, on "Fractures of the Neck of the Femur," and Dr. P. N. Charbonnet, Tulsa, on "Sterility."

Resolutions of sympathy on the death of Dr. J. C. Robinson, Henryetta, were approved and sent to the Journal for publication.

Okmulgee County officers for 1937 are as follows: Dr. J. P. Nelson, Beggs, president; Dr. J. R. Cotteral, Okmulgee, vice-president; Dr. M. B. Glismann, Okmulgee, secretary-treasurer; Dr. V. M. Morris, member of the board of censors; Drs. I. W. Bollinger and M. B. Glismann, delegates; Drs. A. R. Holmes and C. M. Ming, alternate.

CRAIG COUNTY MEDICAL SOCIETY met Tuesday evening, December 1st, and elected the following officers: Dr. P. L. Hays, president; Dr. E. Eldon Baum, vice-president; Dr. James Darrough, secretary-treasurer; Dr. Louis Bagby, delegate; Dr. W. R. Marks, alternate; and Dr. A. W. Herron, censor.

Dr. Elizabeth Lehmer read a paper on "Hyrdocephalus" and presented a very unusual clinic.

Dr. Hugh C. Graham of Tulsa talked on "Diag-

Report of Licenses Granted to Practice Medicine

NAME	Year of Birth	Place of Birth	School of Graduation	Year	Address
Rutledge, Alfred V.	1870	Aberdeen, Miss.	Memphis Hospital Med. College	1900	Yale, Oklahoma
Ishmael, Wm. R.	1910	Oklahoma City, Okla.	Oklahoma University	1935	Oklahoma City, Okla.
Jenkins, Paul A.	1911	———, Okla.	Oklahoma University	1934	Jersey City, N. J.
Hassler, Grace Clause (F)	1900	Enid, Okla.	Oklahoma University	1935	Oklahoma City, Okla.
Spence, Wm. Potter	1876	Good Hope, Ill.	Denver & Gross	1905	Sayre, Oklahoma
Raines, Jas. Richard	1911	Hitchcock, Okla.	University of Oklahoma	1935	Warrenville, Ohio
Sanger, Walter B.	1912	Yukon, Okla.	University of Oklahoma	1935	Spokane, Washington
Allespach, Walter Louis	1894	Buffalo, N. Y.	University of Buffalo	1919	Tulsa, Oklahoma
Barker, Warren Jackson	1910	Kaw, Oklahoma	Tulane University	1936	Ponca City, Okla.
Box, Otho Hawthoren, Jr.	1906	Ft. Jessup, La.	Baylor University	1936	Grandfield Okla.
Coston, Tullos Oswell	1906	Dixie, La.	Johns Hopkins	1930	Oklahoma City, Okla.
Curry, John Russell	1908	Agnew, Neb.	University of Nebraska	1934	Blackwell, Oklahoma
DeGaris, Charles Francis	1886	Hannibal, Mo.	Washington University	1912	Oklahoma City, Okla.
Eaton, Charles Frank	1906	Eris, Kansas	University of Kansas	1935	Perry, Oklahoma
Franklin, Samuel Ewing	1908	Broken Arrow, Okla.	Northwestern University	1934	Broken Arrow, Okla.
Henderson, Jesse Lester	1900	Waverly, Ill.	Washington University	1929	Oklahoma City, Okla.
Miles, George Oliver	1910	St. Louis, Mo.	Arkansas University	1935	Perry, Oklahoma
Moxley, Joseph Newton	1910	Brantley, Ala.	Emory University	1935	Ardmore, Oklahoma
Pattison, Arthur Coleman	1907	Oelwein, Iowa	University of Iowa	1930	Oklahoma City, Okla.
Pursley, Turner	1899	Cerulean, Ky.	Vanderbilt University	1924	Picher, Oklahoma
Sayles, Wm. Jackson	1904	Council Bluffs, Iowa	University of Iowa	1931	Miami, Oklahoma
Swanson, Karl Frederick	1901	Oskaloosa, Iowa	University of Iowa	1927	Tulsa, Oklahoma
Sweet, Lewis Kaigler	1902	Brownwood, Texas	Harvard University	1922	Tahlequah, Oklahoma
VanMatre, Reber Miller	1907	Springfield, Mo.	Washington University	1933	Lawton, Oklahoma
Wood, Jason Guild	1901	Ixatpun, India	College of Medical Evangelists	1925	Weatherford, Okla.
Wood, William McConnel	1909	Sandersville, Ga.	University of Colorado	1905	Muskogee, Oklahoma
Wright, Lennel Irwood	1902	Benton, Kansas	Kansas University	1935	Blackwell, Oklahoma
Janes, Green M.	1865	Clarence, Mo.	Missouri Medical College	1890	Walters, Oklahoma
Collier, James Wesley	1871	———, Alabama	Memphis Hospital Medical College	1901	Tipton, Oklahoma
Morrison, Marjorie Graham Eberhart	1903	———, Arkansas	Oklahoma University	1930	Danville, Indiana

nosis and Treatment of Acute Anterior Polio Myelitis."

CUSTER COUNTY MEDICAL SOCIETY elected the following officers for 1937: Dr. J. T. Frizzell, Clinton, president; Dr. Ross Deputy, Clinton, vice-president; Dr. C. Doler, Clinton, secretary; Dr. N. E. Ruhl, Weatherford, censor for 1937-38-39. Delegates to State Meeting: Dr. A. W. Paulson, Clinton, and Dr. Gordon D. Williams, Weatherford. Alternate delegates: Dr. Leolan Lamb, Clinton, and Dr. Curtis Cunningham, Custer City.

STEPHENS COUNTY MEDICAL SOCIETY met Tuesday evening, December 22, in the dining room of the New Duncan Hotel where a very delightful dinner was served under the direction of the hosts, Drs. W. T. Salmon and E. C. Lindley. Following the dinner Dr. Gerald Rogers of Oklahoma City read a very interesting paper on "The Use of Local Anesthesia in Obstetrics," followed by a highly instructive illustrated lecture on "The Various Types of Kidney Diseases" by Dr. Basil Hays, also of Oklahoma City.

The following officers were elected for the 1937 term: Dr. E. G. King, Duncan, president; Dr. W. T. Salmon, Duncan, vice-president; Dr. Fred T. Hargrove, Duncan, secretary-treasurer; Dr. W. S. Ivy, Duncan, delegate; Dr. A. M. McMahon, Duncan, alternate delegate; Dr. J. L. Patterson, Dr. A. M. McMahan and Dr. W. T. Salmon, censors.

The next meeting will be held January 25, 1937.

PAWNEE COUNTY MEDICAL SOCIETY elected the following officers for 1937 at their meeting in December: Dr. J. L. LeHew, Pawnee, president; Dr. Harry Spaulding, Ralston, vice-president; Dr. L. P. Hetherington, Pawnee, secretary-treasurer.

Southeastern Oklahoma Medical Association Meets at Durant in December

Southeastern Oklahoma Medical Association met at Durant, Okla., Thursday, December 10, 1936. Sessions were held in the Sunday school room of the First Methodist Church. The program follows:

Urological Backache—Dr. A. R. Russell, McAlester, Okla.

Preventive Medicine—Dr. H. B. Fuston, Bokchito, Okla.

Luncheon was served at 12:30 p. m., First Methodist Church, the program being resumed at 1:30 p. m. with invocation by Rev. R. T. Blackburn, pastor First Methodist Church of Durant.

Welcome Address—Dr. Jas. L. Shuler, Durant.

Response—Dr. J. F. Park, McAlester.

Infectious Cerebro-Spinal Meningitis—Dr. Roy L. Cochran, Caddo.

Pneumonia Among the Rural Poor—Dr. W. A. Ramsey, Quinton.

Catarrhal Jaundice—Differential Diagnosis and Management—Dr. C. E. Lively, McAlester, McAlester.

Legislation—Dr. J. S. Fulton, Atoka.

Hernia—Dr. G. E. Harris, Hugo.

In addition to the foregoing program other timely medical and surgical subjects of general interest were discussed.

Dr. A. J. Wells, Caddo, is president, and Dr. John A. Haynie, Durant, secretary of the association.

Just a reminder, doctor. Memberships become delinquent February 1st.

OKLAHOMA REGIONAL FRACTURE COMMITTEE ANNOUNCED

Following is a list of the Oklahoma Regional Fracture Committee:

Dr. Earl D. McBride, Chairman, Oklahoma City; Dr. Charles R. Rountree, Oklahoma City; Dr. Willis K. West, Oklahoma City; Dr. D. H. O'Donoghue, Oklahoma City; Dr. C. E. Clymer, Oklahoma City; Dr. Elias Margo, Oklahoma City; Dr. Howard B. Shorbe, Oklahoma City; Dr. Robert L. Noell, Oklahoma City; Dr. Frank L. Carson, Shawnee; Dr. Edgar E. Rice, Shawnee; Dr. McLain Rogers, Clinton; Dr. Victor C. Tisdal, Elk City; Dr. H. E. Huston, Cherokee; Dr. J. L. Patterson, Duncan; Dr. John E. McDonald, Tulsa; Dr. Frank Stuart, Tulsa; Dr. Albert W. Pigford, Tulsa; Dr. William P. Fite, Muskogee; Dr. L. S. Willour, McAlester; Dr. Thomas McElroy, Ponca City; Dr. Robert B. Gibson, Ponca City; Dr. Lloyd C. Vance, Ponca City; Dr. John A. Haynie, Durant; Dr. Warren T. Mayfield, Norman; Dr. Walter Hardy, Ardmore; Dr. Thomas M. Aderhold, El Reno; Dr. J. W. Mercer, Cherokee; Dr. E. M. Woodson, Poteau; Dr. G. D. Funk, El Reno; Dr. John L. LeHew, Guthrie; Dr. E. A. Aisenstadt, Picher; Dr. Roy L. Fisher, Frederick; Dr. Ernest B. Dunlap, Lawton; Dr. John F. Simon, Alva; Dr. Alfred M. Evans, Perry; Dr. F. A. Hudson, Enid; Dr. E. A. Canada, Ada; Dr. Raymond H. Fox, Altus; Dr. Henry C. Weber, Bartlesville; Dr. M. C. Clift, Blackwell; Dr. R. H. Sherrill, Broken Bow; Dr. H. M. McClure, Chickasha.

Dermoid and Epidermoid Tumors (Cholesteatomas) of Central Nervous System

J. Grafton Love and James W. Kernohan, Rochester, Minn, (Journal A. M. A., December 5, 1936), base their discussion on a clinical, surgical and pathologic study of fifteen congenital epthelial tumors (epidermoids, dermoids, pearly tumors and cholesteatomas) of the central nervous system that have been verified microscopically at the Mayo Clinic. Fourteen of the fifteen patients who harbored these tumors were operated on by the members of the neurosurgical staff of the clinic, with three post-operative deaths. Fourteen of the tumors were intracranial. One dermoid was found in the spinal cord. The average age of the patients who had dermoid tumors was 22.3 years at the onset of symptoms and the average age of patients who had epidermoid tumors was 20 years at the time of onset. The average duration of symptoms was sixteen years in cases in which epidermoids were present and eight and a half years in cases in which dermoids were present. Twelve of the fourteen patients who had a congenital epithelial tumor (dermoid or epidermoid) in the head complained of headache. Only two patients had had convulsions; both of these patients had tumors that were situated in the basofrontal region. Twelve patients displayed definite alterations in their mental reactions. A congenital intracranial dermoid or epidermoid should be suspected in any case in which mental disturbance is associated with headache that has been present for a long time and suggests increased intracranial pressure. Five of the patients had edema of the optic disks at the time they were examined at the clinic. One had an associated defect in the field of vision which was sufficiently characteristic to localize the tumor. There are no criteria for making a correct diagnosis of the type of intradural tumor prior to operation. The relationship of trauma to these tumors is not clear. Trauma to the region of such a tumor doubtless will influence its growth, but injury in itself is not believed to be sufficent to cause the tumor.

RESOLUTIONS

DOCTOR A. L. McINNIS

WHEREAS, the Supreme Master of our destinies has beckoned to one of our beloved colleagues, directing him to lay aside his mortal habiliments and cease his earthly labors, and

WHEREAS, by the passing of Dr. A. L. McInnis, the entire medical profession, the community at large and those who have learned to depend on him for advice and counsel have suffered a great loss, and there has been left a place, vacant, that cannot be filled, not only in the profession but in the hearts of all who knew him, and

WHEREAS, we, the members of the Garfield County Medical Society mourn the loss of our fellow member and desire to convey to the world our appreciation of his great service, therefore,

BE IT RESOLVED, that we express to the family our sincere sympathy and condolence in this their hour of travail, and

BE IT FURTHER RESOLVED, that a copy of these Resolutions be sent to the family of Dr. McInnis, a copy recorded on the minutes of the Garfield County Medical Society, a copy sent to the Journal of the Oklahoma State Medical Association and a copy to the press of this city.

W. P. Neilson, M.D.
J. R. Swank, M.D.
H. F. Vandever, M.D., Committee.

DOCTOR W. G. KIEBLER

WHEREAS, the Supreme Architect of the Universe, in His infinite wisdom has seen fit to call from among us Dr. W. G. Kiebler, who for many years labored faithfully in his chosen field for the alleviation of suffering humanity, and

OBITUARIES

DOCTOR W. G. KIEBLER

Dr. William G. Kiebler was born near Paducah, Kentucky, May 28, 1884, where he grew to young manhood. After completing his preliminary education he entered the University of Louisville School of Medicine, from where he graduated in 1905. Following graduation he began the practice of medicine at Carrsville, Kentucky. In 1910 he came to Oklahoma, locating at Goltry, at which place his only son, William, Jr., was born. In 1920 he moved to Enid and joined the staff of the Enid General Hospital. Later he moved his offices to the Broadway Tower. Dr. Kiebler had an extensive practice and was actively engaged with it until a few days before his death, which occurred on November 29 following a brief illness of pneumonia.

It became noticeable to his friends several days before he was forced to take to his bed that he was not feeling the best and he was urged to quit for a while that he might recuperate, but an indomitable will and a deep concern for his patients led him to carry on up to the very portals of death. His first consideration was always for his patients.

Dr. Kiebler had the happy gift of making friends, and keeping them, and was held in high esteem by all who knew him. He believed in his profession, his friends and his community. He was an active member of the Garfield County Medical Society and was a thirty-second degree Mason.

Funeral services were held at the Central Christian Church Wednesday, December 2, with the Rev. J. N. Sours in charge. A large number of friends gathered there to pay their last sad respects and tribute to a life well and usefully spent. Rev. Sours, in a summation of his eulogy of Dr Kiebler, said: "Whether or not he be skeptic, an agnostic, or a believer, the conscientious physician, in the practice of his profession, is truly following in the footsteps of the Master."

DOCTOR A. L. McINNIS

Dr. A. L. McInnis was born at Llano, Texas, June 28, 1883. He finished the course at the West Texas Normal at Cherokee and later attended the St. Louis College of Physicians and Surgeons, completing his medical course at the Tulane University, where he was graduated in 1909. After a short period of residence in Oklahoma City, he located in Enid where he lived and practiced his profession until his death which occurred December 2, following a brief illness of pneumonia. He is survived by his wife, who lives at the home, 1204 Indian Drive, his son, Harry, his mother, two sisters and two brothers.

Dr. McInnis, "Mac" to his physician friends, was a loyal and active member of the Garfield County Medical Society, a member and worker in the First Presbyterian Church, the Enid Rotary Club and the Masonic order where he was a thirty-second degree Mason, a Shriner and a Knight Templar.

Dr. McInnis had not been in good health for the past year but he kept determinedly on despite his weakened condition, making his regular calls and maintaining his office hours for the many who sought his advice and counsel. The welfare of his patients was always uppermost in his mind. He was just as sincere in community service. Given a task to perform, he pursued it with all his energy until it was completed. He was a dependable man.

Funeral services were held in the First Presbyterian Church, December 4, with the Rev. Thomas H. McDowell and Dr. Dan Luther Edwards, his former pastor, in charge. The large auditorium of the church was filled with his friends gathered to pay their last tribute of respect for the physician, and the man they loved. Members of the Garfield County Medical Society and of the Enid Rotary Club attended in a body to pay their tribute to their colleague and fellow member.

"We shall meet and we shall miss him; there will be one vacant chair."

WHEREAS, his vacant chair will be an ever present reminder that his absence from his accustomed place among us is keenly felt by those of us who must carry on without him, and

WHEREAS, the Garfield County Medical Society has lost a faithful member and those among whom he labored for so many years, a trusted and valuable counselor, therefore

BE IT RESOLVED, that we extend to the family our deepest sympathy and assure them of our sincere desire to share with them this burden of loss, and

BE IT FURTHER RESOLVED, that a copy of these Resolutions be sent to the family of Dr. Kiebler, a copy spread on the minutes of the Garfield County Medical Society, a copy to the Journal of the Oklahoma State Medical Association and a copy to the press of this city.

R. C. Baker, M.D.
Julian Feild, M.D.
H. H. Hudson, M.D., Committee.

DOCTOR J. C. ROBINSON

On December 9, 1936, Dr. J. C. Robinson of Henryetta, Oklahoma, laid down his labors and departed this life for the great beyond

Therefore be it resolved by the Okmulgee County Medical Society that we honor him by offering the following resolutions:

WHEREAS, our fellow member and friend, Dr. J. C. Robinson of Henryetta, Oklahoma, who was a member of the Okmulgee County and State Societies of long standing, was called from us on December 9, 1936, and whereas he has rendered through it most valuable service to the profession in this society as one of the most beloved members of the medical profession.

THEREFORE, be it resolved that we receive this information with profound sorrow and regret, and realize our loss and the loss to the community in which he lived.

BE IT FURTHER RESOLVED that a copy of these resolutions be made a part of our minutes of this meeting, that it be published in the State Journal and a copy be sent to his family.

A. R. Holmes, M.D.,
G. Y. McKinney, M.D.,
G. A. Kilpatrick, M.D., Committee.

Endocrine Factors in Sterility

Richard Chute, Boston (Journal A. M. A., December 5, 1936), is of the opinion that much of the treatment of endocrine sterility in the past has been unsuccessful owing partly to the indiscriminate use of miscellaneous gland therapy, based on vague hopes rather than on science. Clinically there are three glands, the hypofunctioning of which are mainly responsible for most endocrine sterilities—the anterior pituitary most frequently, then the ovary and the thyroid. In dealing with sterility of probable endocrine origin, it is of fundamental importance to find out by means of both clinical and laboratory observations, including biologic hormone tests, which gland is primarily responsible, in order to give the proper treatment intelligently and effectively. The therapeutic injection of gonad substance not only does not stimulate the gonads but injures them and is contraindicated in sterility. At the present time the simultaneous administration of both pituitary gonadotropic principles would seem to be the best form of therapy in cases of gonadal hypofunction which have been shown to be secondary to failure of the anterior pituitary. Thyroid extract is a very valuable aid to the treatment of sterility. Since nothing can be done for sterile adults with markedly and completely hypoplastic testes and ovaries, it is desirable for adolescents who present any endocrine symptoms, such as delayed appearance of the catamenia, to consult a physician and have treatment before it is too late and the developmental impulse is exhausted

Giant Cell Bone Tumor: Further Observations on Treatment

Carleton B Peirce and Isadore Lampe, Ann Arbor, Mich. (Journal A. M. A., December 5, 1936), found that with thorough curettage, surgery alone is effective in the control of giant cell tumor of the bone. Contrary to their previously expressed belief, adequate curettage with or without cauterization has been as effective as curettage with irradiation. There are those cases in which the location of the tumor, the age or physical condition of the patient, or the loss of occupational time incident on surgical attack are real factors in the life of the patient. In these, irradiation offers symptomatic relief and anatomic improvement. Further, irradiation alone offers as much for the control or cure of giant cell tumor as either of the other methods. The comparison of surgery alone as of one hundred per cent is a fallacy in so small a group of cases. The character of the response of giant cell tumor to irradiation continues to substantiate the belief that the growth restraint induced is specific for the giant cell, and that giant cell tumor is essentially not a true neoplasm. Hence large or massive doses are theoretically of less value than smaller and more frequent amounts of radiation and may tend to be more irritating to the normal connective tissue elements. Cessation of increase in the size of the lesion and the disappearance of symptoms should be considered as an indication of favorable response, although reparative changes in the involved bone are not apparent for some time.

Primary Tularemic Ulcers in Pharynx

F. H. McGovern, University, Va. (Journal A. M. A., November 14, 1936), reports a case in which primary tularemic lesion was located in the pharynx. The clinical course was typical of tularemia; there was no evidence of a primary lesion on any part of the body other than the posterior wall of the pharynx and no other than cervical adenopathy was present. A positive agglutination for Bacillus tularense was obtained in the third week of the disease in dilutions up to 1:1,280 in three separate laboratories. On direct questioning a history was obtained of picking ticks from the ears of the patient's pet dog and crushing them between her fingers one week before the sudden onset of sore throat and high fever. The infection was evidently carried to the mouth on fingers that had crushed infected dog ticks. Francis also believes that this is the probable mode of infection. If the organisms can be carried on the fingers to infect other parts of the body, it can probably also be carried to the pharynx. The eating of improperly cooked infected food is another way in which a primary lesion may occur. The relief of pharyngeal discomfort achieved by the one per cent mercurochrome spray is of interest in view of the report by the Camps on the intravenous use of mercurochrome. The recult with arsphenamine could not be evaluated because of the inadequate dosage. The possibility of the disease in the pharynx should be borne in mind in districts such as Virginia, where tularemia is prevalent.

ABSTRACTS : REVIEWS : COMMENTS *and* CORRESPONDENCE

PLASTIC SURGERY

Edited by
GEO. H. KIMBALL, M.D., F.A.C.S.
404 Medical Arts Building, Oklahoma City
CURT VON WEDEL, M.D.
Von Wedel Clinic, 610 N. W. 9th St., Oklahoma City

By GEO. H. KIMBALL, M.D., F.A.C.S.

A Method of Tube Flap Formation. John Stage Davis, M.D., and Edward A. Kitlowski, M.D., Baltimore. Southern Medical Journal, December, 1936.

The authors discuss the technique of forming a tube flap which differs from the usual technique. Instead of making parallel skin incisions of equal length, they use parallel incisions which are staggered, so that when the tube is formed, greater length is secured; also the triangular areas near the pedicle can be closed more efficiently.

The article is illustrated by very fine photographs to make clear the difference in technique.

COMMENT: The authors are to be commended on a clear cut description for the useful variation of technique of tube flap formation.

The Repair of Cleft Palates Primarily Unsuccessfully Operated Upon. Earl C. Padgett, M.D., Kansas City, Mo.

The author points out that every surgeon who performs cleft palate surgery encounters failures. He states that some cases undoubtedly were operated improperly. In other instances some factor beyond the control of the surgeon may have caused simple failure of union or even a slough.

In a series of three hundred different patients operated upon for cleft palate, one hundred and forty-one were found to have been operated upon before, the majority had been operated upon more than once, and some gave a history of as many as five unsuccessful operations. Fifteen cases of the group were primarily unsuccessful cases of our own and one hundred and tweney-six had been previously operated upon by other surgeons.

For purposes of discussion these cases are divided into two large groups:

1. Group without absolute loss of tissue.
2. The group with a definite loss of tissue.

Discussion of Group No. 1, without loss of tissue:

These cases were operated according to the principles of the Dieffenbach-von Langenbeck operation in most instances. Usually in these cases no attempt was made to preserve the palatine artery. When the cleft was unduly wide or the palate unduly short, sectioning of the hamular process aided in relaxation. In some cases the shortened palate was lengthened by uniting the posterior pillars.

Discussion of Group No. 2, with loss of tissue:

These cases presented quite unique problems when the repair was effected successfully. These patients presented defects which fell into two or even three groups.

1. Large midline loss in the hard palate:
2. A loss of part or most of one of the mucoperiosteal flaps of the hard palate.
3. A hole in the anterior palate or lateral palate which is directly adjacent to the aveolus.
4. A large defect at the hard palate-soft palate juncture.
5. Considerable loss of soft palate tissue.
6. An almost complete loss of tissue of the hard palate.

In group No. 1 with loss of moderate proportion, it was found possible to use a modification of the Dieffenbach-von Langenbeck operation with a fair degree of certainty of obtaining closure. When the hole was anterior a flap from lip or cheek was employed.

In group No. 2, usually a relatively long and broad cheek flap was employed in this case.

In group No. 3, some of these cases were repaired by a thin lengthwise flap from the wider and thicker of the two palatal flaps. If this procedure was not successful, a prosthesis was sometimes recommended.

In group No. 4, usually successfully closed by long lateral incisions and extending them well back thoroughly freeing palatal flaps. Sometimes this was reinforced by a cheek flap especially when the palate was short and union questionable.

In group No. 5, the Dieffenbach-von Langenbeck principle was used, plus suturing of the posterior pillars in some. In the ones who had had several operations previously and where sloughing had taken place in the soft palate or scarring to the point that mid line union seemed hopeless, a posterior pharyngeal flap was used.

In group No. 6, the extra-palatal tissue was employed. In two cases the soft palate was rebuilt by the use of posterior pharyngeal flap and the hard palate rebuilt by extra oral tissue.

The extra palate tissue is not a new procedure. It was unsuccessfully attempted by Blasius, by the use of a flap from the neck. Thiersch in 1867 and Rotter in 1869 used the principle successfully; von Eiselsberg and Blair have used this method successfully.

The author points out the dangers of the operation together with some of the conditions which should be present before its use is employed.

AUTHOR'S CONCLUSION: One might say that it is extremely rare that a patient, with cleft palate unsuccessfuly operated upon, is seen in whom final result will be found to be about as good as if he had gained primary union at first operation, if the proper time selected for operation is indicated in a given condition. One must individualize the patient, the condition and procedure. Consider age of patient, likelihood of union, number of operations required and size of defect, and repair defect under conditions encountered. The posterior pharyngeal flap operation is a satisfactory operation when used to obtain union and giving length to a soft

palate in which the tissue loss has been considerable. As far as the proposition of prosthesis is concerned, the question may be decided when two conditions are fulfilled: first, whether or not the patient, or those responsible, wish the palate built in after the advantages and disadvantages of both methods have been explained, and second, if the operation is decided upon whether or not the operator can do the operation. The procedure is certainly not one to be recommended to all surgeons with whole-heartedness but in good hands it is not at all an unjustifiable procedure. Usually it is in the patient in whom the palate has been repaired just barely acceptably but too well to justify more radical methods, that one really sees the poorest functional results.

COMMENT: Dr. Padgett's article sets forth very clearly the various types of procedure for secondary operations in cleft palate. It is true that every surgeon who does a goodly number of palate operations encounters some failures. The cases successfully operated upon at the first operation without loss of tissue seem fairly easy to close at a second operation.

Two things, I think, happen. One is that the collateral circulation is more thoroughly established. Second, the palate flaps become thicker.

Possibly the fact that the patient is usually older may make the operation seem easier.

With experience I have become convinced that the majority of palates are best and most successfully operated upon in stages, beginning at the age of about two years.

Some of the modifications of the Dieffenbach-von Langenbeck technique have been employed here for secondary operations. Use of extra palate tissue has seemed to me a very formidable procedure. I believe this operation is indicated in some cases and should be used after the possibilities are thoroughly explained to the patient or the parents.

By CURT VON WEDEL, M.D.

In the October and December Journals of Surgery, Gynecology and Obstetrics, 1936, have appeared two splendid articles on the repair of palates, or rather of the soft palate and the partially destroyed palate.

The Repair of Cleft Palates Primarily Unsuccessfully Operated Upon. By Earl C. Padgett, M.D., Kansas City, Mo. Surgery, Gynecology and Obstetrics, October, 1936, Page 483.

I think this is a very splendid article on the subject. Dr. Padgett divides his subject into two groups: (1) the group with little or no loss of tissue and (2) the group with a definite loss of tissue. He reports on some three hundred different patients operated upon of whom one hundred and forty-one individuals had had previous operations.

GROUP I—WITHOUT ABSOLUTE LOSS OF TISSUE: On these he uses the principle of the Dieffenbach-von Langenbeck operation. He uses a long, lateral incision and attempts to preserve the palatine artery at all costs. When the trouble is found to be a soft palate he uses the posterior pillars, and in that way gets better relaxation and is able to elongate fully one-half or three-quarters of an inch. If there is a thin area at any place, he turns down a flap in the cheek.

GROUP II—LOSS OF TISSUE: He divides these into various headings: (1) a large midline loss in the central part of the hard palate, (2) a loss of a part or most of one of the flaps of the hard palate, (3) a hole in the anterior or lateral palate which was adjacent to the alveolus from which the mucoperiosteal covering has been lost, (4) a large defect at the hard palate-soft palate juncture, (5) a considerable loss of soft palate tissue, and (6) an almost complete loss of the tissues of the hard palate.

No. 1.—LARGE MIDLINE LOSS IN THE HARD PALATE: He feels it is usually best to close these with a modification of the Dieffenbach-von Langenbeck operation. In some cases it was necessary to turn a lateral flap from the cheek, and in a few cases a modification of the Lane principles was used.

No. 2.—LOSS OF A PART OR MOST OF ONE OF THE MUCOPERIOSTEAL FLAPS OF THE HARD PALATE: The cheek flap is probably the best procedure. It may be necessary to reinforce this by turning down a flap of the Lane type. One must be very careful in cutting this cheek flap to be assured of an adequate blood supply in this flap.

No 3.—A HOLE IN THE ANTERIOR PALATE OR LATERAL PALATE WHICH IS DIRECTLY ADJACENT TO THE ALVEOLUS: These are sometimes very hard to close. It may be better to use prosthesis.

No. 4.—A LARGE DEFECT AT THE HARD PALATE-SOFT PALATE JUNCTURE: He closes these with a modification of the Dieffenbach-von Langenbeck principle, going up on the cheeks on both sides to get additional tissue and at the same time cutting the hamular processes. He gives a table of the number of operations and the end results, which is excellent.

No. 5.—CONSIDERABLE DEFECT IN THE SOFT PALATE: If possible, he feels that one should close these with a modification of the Dieffenbach-von Langenbeck principle, but when a great deal of tissue has been lost and there is a good deal of scar present this, of course, can not be done. He then uses a pharyngeal flap operation. In turning up the flap from the posterior pharynx and allowing the upper portion of this flap to remain attached to the pharynx, there will be tissue enough to close the opening and ample space around either side of this flap. He feels that it is better to leave the pedicle attached at the pharynx as it aids in speech, but if the flap is in any way annoying, it can be cut across. He believes that this operation has a definite position, and while it may not be physiologically an ideal procedure, it will allow one to close a large defect in the soft palate, and will result in a surprisingly good functional result. He has had very little trouble with sinusitis resulting from this procedure.

No. 6.—ALMOST COMPLETE LOSS OF BOTH THE HARD AND SOFT PALATE: He advocates the use of several methods. One must be sure before one attempts to do anything on these that the patient is a good physical risk. One, of course, must use extrapalatal tissue. He goes into considerable length in describing flaps taken either from the arm or from the leg in doing these procedures. He, himself, feels that these procedures are justifiable even though there has been considerable criticism against their use.

In conclusion, he states that it is extremely rare that an individual with cleft palate unsucessfully operated upon is seen in whom, if the proper time is selected for the operation which is indicated in a given condition, cannot be offered a good deal of improvement, and in some cases the final result will be found to be about as good as if he had gained primary union at the first operation.

A review of literature on the subject is given at the close of the article, and it is interesting to note that one of the first operations done in this country was performed by John C. Warren and recorded in the American Journal of Medical Science of 1828, Volue III, page 1. This volume is in my own personal library, and inasmuch as it is

short, I think it is well and exceedingly interesting to quote it verbatim.

"On an Operation for the Cure of Natural Fissure of the Soft Palate. By John C. Warren, M.D., Professor of Anatomy and Surgery in the Medical Institution of Harvard University, Boston.

"Some years ago I had occasion to perform an operation for remedying the natural fissure in the soft palate. At that time I understood the operation had been once done in Poland or Germany, and once by Professor Roux; but I sought in vain for details which might assist me in its performance. However, I executed it satisfactorily then, and have since repeated it; and therefore believed that an account of the manner in which it was effected might be useful, although I suppose it very possible that Professor Roux and others may have devised more ingenious methods.

"As the operation in the first case succeeded, and was imitated in the others, I shall describe it in connection with that case. The patient was a healthy young woman of sixteen. She was induced to apply for an operation, in consequence of the impracticability of distinctly articulating her words, so that her speech was offensive from its guttural tones, and not intelligible to those unaccustomed to it. The fissure began at the edge of the os palati, where the fleshy membrane was so thin as to be transparent. Its width was about three-quarters of an inch.

"The patient being well supported and secured, a piece of wood an inch wide, a little curved at the end, witha handle to be held by an assistant, was placed between the molar teeth on one side, to keep the mouth open. A sharp pointed curved bistoury was thrust through the top of the palate, above the angle of the fissure, and carried down on one edge of the fissure to its extremity. The same was done on the opposite side, thus cutting out a piece in the form of the letter V, including about a line from each edge. Next a hook with an eye in its extremity, of the form represented, in Pl. I., armed with a triple thread of strong silk, was passed doubled in the mouth, through the fissure and behind the palate. The palate was pierced by it, at one-third of the length of the fissure from the upper angle of the wound, so as to include about three lines of the edge of the soft palate. The eye with the ligature being seen, the latter was seized by a common hook and drawn out. The eyed hook was then drawn back, turned behind the palate, and the other edge transfixed in a similar manner. A second and a third stitch were passed in the same manner, the third being as near as possible to the lower end of the fissure. Then seizing the upper ligature, I found no difficulty in tying it with my fingers, without the aid of a 'serve-noeud.' The others were tied in the same manner, and the knots placed on one side of the wound, in order to prevent their pressing into the fissure. On drawing the third ligature I had the satisfaction to see the whole fissure closed.

"The patient was exhausted by the operation, but soon revived. She passed twenty-four hours without speaking, or taking a drop of liquid in her mouth. For two days more she took only a little water. On the fourth day I ascertained that the edges of the wound had perfectly united, except at the lower extremity, where a slight separation took place, which afterwards united, by means of an additional stitch. At the end of seven days I cut out the stitches, which were already loose. This patient left the hospital a day or two after. About two years subsequent to the operation I saw her, and found she swallowed perfectly, spoke very well, and was daily improving.

"During the prevalence of the influenza of 1826, I operated with some reluctance on a lad of eleven years old, who had been brought a great distance for the purpose. A perfect union was effected, but at the end of three days he was seized with the influenza, and not understanding how to manage his cough, he tore open the adhesions, and I at once removed the stitches. This occurrence has led me to advise against the operation in children. The boy spoken of will undergo it a second time in the course of the next year.

"The principle difficulty I met with in this operation was in disengaging the ligature from the hook, after it had perforated the palate. In order to obviate this, I had hooks of various forms made afterwards by Weiss, of London; but none of them answered the purpose so well as the one here represented. I have thought that one with a movable point, made to slip from a socket in the hook, so that the point and the ligature might be drawn out together, would lessen this difficulty, and have had one constructed by Rose & Sellers, of which a drawing accompanied this paper. This has the same form as that I first used, but that the point is movable.

"If a needle without the movable point is used, care must be taken in drawing out the ligature to draw on each side from the concavity of the hook. If attention is not paid to this, it may happen, that in drawing out the ligature on the first side, you entirely disengage it from the hook, which must then be armed anew. And again, when you draw out the ligature on the second side, the hook may be retained by the ligature, which cannot then be withdrawn, unless the stitch is drawn from the wound. This last would be a worse mistake than the other. Both of these accidents are avoided if the point be movable. In this case the point and ligature are withdrawn together, by passing a common hook through the eye of the point. This point is to be armed anew with the opposite end of the ligature, and then passed on the second side of the fissure as on the first. There can be no danger of the point falling down the patient's throat, since it is secured by the ligature.

"I have been very desirous to try this operation on the case of natural fissure of both soft and hard palate, such as often accompanies the hare-lip. In such a case it might be justifiable to try the operation on an infant; for if a union of the soft palate could be produced at an early period of life, it is quite probable that a disposition would be produced to fill up the bony fissure.

"Whether in an adult any benefit could be derived from such an operation is doubtful. I shall embrace the first opportunity to making the trial."

Elongation of the Partially Cleft Palate. By James Barrett Brown, M.D., F.A.C.S., St. Louis, Missouri. From the Department of Surgery, Washington University School of Medicine, St. Louis, Missouri. Surgery, Gynecology and Obstetrics, December, 1936. Page 768.

Dr. Brown states that in the repair of cleft palates, the best possible funotional result will require pliable tissue sufficiently long to meet the posterior wall of the pharynx in the sphincter-like action that closes the nose from the throat. (No palate that is not functionally good is any better than a dental plate. To be functionally good the palate must meet the posterior wall of the pharynx.)

Brown describes his operation which is a modification of the Dorrance procedure of the so-called push back operation. He divides his procedure into two operations:

I. In the first operation an incision is made from the anterior pillar all the way around the alveolar process to the opposite side, and the whole hard palate is elevated down to the palatine ar-

teries. These arteries are then elongated carefully by stretching them as they come out of their foramina. The hamulus is then freed and the tissue separated, and the tendon severed. This flap is then sutured into its advanced position. The anterior defect is covered smoothly with a pack of balsam of Peru and iodoform gauze.

II. In the second operation one merely freshens up the edges of defect and undermines it through the same lateral incision, to get mobilization. It is closed as one usually closes a soft palate.

He then summarizes the fifty-three operations that he has performed on thirty-two patients. He states he had hemorrhage in one case, that he has had no trouble with the blood supply, and neither has he had trouble with the anterior portion that has been denuded, as this heals in about thirty days and gives no trouble. He states that if these palates have been previously operated upon, one had better delay the flap.

These operations should not be done, as a rule, on children under eighten months of age. It is best to do them in two stages; this procedure is not one of choice but the procedure that should be used when there is a soft palate or when there has been a loss from previous operations. He reports excellent end results, particularly so far as speech is concerned.

ORTHOPAEDIC SURGERY

Edited by Earl D. McBride, M.D., F.A.C.S.
717 North Robinson Street, Oklahoma City

Repair of the Ligaments of the Knee. Report of a New Operation for Repair of the Anterior Crucial Ligament. Willis C. Campbell. Surgery, Gynecology and Obstetrics, LXII, 964, June, 1936.

The writer discusses the indications for repair of the knee ligaments and describes the anatomy and mechanism of these ligaments. The most frequent and disabling injuries are those of the internal lateral ligament, the internal semi-lunar cartilage, and the anterior crucial ligament, either alone or in combination. In the writer's series there was no instance of injury of the external lateral ligament or of the posterior crucial ligament disabling enough to warrant operative measures.

An operative technique for replacement of the anterior crucial ligament is described and clearly illustrated. In brief, it consists of obtaining a strong piece of tendon, fascia, and capsule, one-third of an inch wide by eight inches long, through an incision just mesial to the patella: this is left attached at its distal end, and is then threaded through drill holes in the tibia and femur placed as nearly as possible in the line of the original anterior crucial ligament. The strip is sutured above and lateral to the periosteum and fascia lata, with the knee in one hundred and forty degrees of flexion. A posterior splint is applied, with the limb in full extension, and is worn for three weeks; then active and passive motion is started. The incision permits arthrotomy if necessary. Apparently excellent results have been obtained in nine cases.

The advantage of this procedure are "the extreme simplicity, minimum trauma, shorter incisions, and decrease in operating time."

Case of Malunion of Colles' Fracture and Its Orthopaedic Repair. A. B. Inclan. Cir. Ortop. y Traumatol., IV, 63, 1936.

Surgical intervention in cases of Colles' fracture with malunion should aim at the anatomical reconstruction of the articular line of the radius, especially of the bistyloid line, and at the correction of the deformity. The author recommends an osteotomy of the radius at the height of the fracture with restoration of the epiphysis to its correct position and introduction of an osseous wedge at the site of the fracture, in order to lower the styloid process of the radius without using osteosynthetic material. A preliminary ulnar osteotomy is not necessary in adolescents and children on account of favorable anatomical conditions at this age. In adults such a preliminary procedure is unavoidable as it facilitates a proper setting of the radius; otherwise the interposition of the interosseous ligament and the pronator quadratus muscle interferes with reduction of the fragments. An osteotomy of the ulna with removal of a wedge involves the danger of non-union, as observed in the author's case. Pain, stiffness of the articulation, and weakness after exertion disappeared entirely after the surgical procedure.

Fractures of the Shaft and Neck of the Femur. Report of One Hundred and Nineteen Cases. Irwin E. Siris and C. J. Delaney. Am. Jr. Surg. XXXII, 277, May, 1936.

During the past fifteen years, there have been ten cases of fracture of the neck of the femur in the Children's Surgical Service, Bellevue Hospital; six of these were reported by Colonna. Two cases were treated by the authors with Russell traction, and the other two by the Whitman method. Three cases of fracture of the shafts of both femora were treated by the Russell method with good results.

One hundred and nineteen children with fracture of the femur were treated in five years—thirty by a modification of Bryant's overhead suspension; fifteen by reduction on the Hawley table, skin traction, and a plaster spica; and seventy-two by the Russell method. Except in cases of children under four, where Bryant's method was used, the Russell method was used in all cases as a routine, with uniformly satisfactory results. The Thomas splint was used by the ambulance surgeons in all cases. There was no residual shortening in one hundred and nine of the one hundred and fifteen cases of fracture of the shaft of the femur. The authors use a modified apparatus which holds the leg in abduction and internal rotation.

EYE, EAR, NOSE AND THROAT

Edited by Marvin D. Henley, M.D.
911 Medical Arts Building, Tulsa

Meningococcus Conjunctivitis Followed by Septicemia and Beginning Meningitis. Fred M. Reese, M.D., Baltimore. American Journal of Ophthalmology, September, 1936.

Meningococcus conjunctivitis was a frequent involvement of cerebro-spinal meningitis before the advent of antimeningococcus serum. Since the therapeutic use of this agent, the complication rarely occurs. McKee, 1908, raised the question as to whether the infection of the conjunctiva was primary or secondary from the nose. Tillet and Brown, 1935, reported a large series of cases of meningitis. The mode of onset of their cases they divided into three classes, namely: 1. Cases with upper respiratory infection of one to three weeks' duration before evidence of meningitis. 2. Cases with the onset accompanied by upper-respiratory-tract symptoms, but different from the first group in a more severe and abrupt onset. 3. Cases with sudden and sometimes explosive onset, the symp-

toms being directly and primarily those of meningitis, without any preceding history of nose-and-throat infection. The author's case comes under this last classification.

A nurse, age 19, whose chief complaint was that one morning she awoke with a red uncomfortable eye. Her family history and past history was essentially negative. Examination at 9 a. m. of the day her complaint started showed a conjunctivitis of the right eye, mild in character, with a small amount of discharge and some swelling. The cornea was normal in appearance. Intraocular examination was negative. The left eye was normal. Argyrol followed by boric acid irrigations were used hourly. A few hours later the eye was generally much worse, greater edema, more discharge and some pus. Smears at this time showed the presence of a gram-negative intra- and extracellular diplococcus. At this the history was elicited from the patient that she had been on duty very recently with a case of epidemic meningitis.

After hospitalization and treatment of the eye every thirty minutes for a few hours she had a chill and complained of headache and backache. At this time she had a temperature of 103.8, pulse 134, respiration 24, blood pressure 90/60, W. B. C. 13,800 with ninety per cent polymorphonuclear leucocytis. There was a large subconjunctival hemorrhage. The cornea remained clear despite an increased muco-purulent discharge. Nasal congestion was present, pharynx injected, and tongue coated. Neurologically she was negative; urine negative; spinal fluid clear, pressure normal, no increase of cells.

It was necessary to desensitize her to horse serum. After this was done ten cc. of polyvalent antimeningococcus serum was given intravenously (on the evening after she first noticed her illness in the morning). This caused her temperature to drop from 105.6 to 101 degrees. The following day the same intravenous injection was repeated three times: on the third day another 10 cc. was given. A positive Kernig with other signs developed on the third and fourth day. The patient however recovered without any untoward sequalae except a mild serum sickness.

Conjunctival, nose, throat, blood, and spinal fluid cultures showed meningococcus.

The author's summary: A case of meningitis is reported. The evidence in this case indicates that the conjunctiva was the actual portal of entry for the infecting organism.

Post-Operative Regeneration of the Mucous Membrane of the Paranasal sinuses. A Summary. Durwin Hall Brownell, MD., Ann Arbor, Mich. Archives of Otolaryngology, November, 1936.

The matter of regeneration of nasal mucous membrane should be of great importance to the nasal surgeon who oft times removes or destroys quite large areas of this tissue.

Carter in 1930 said: "Bare bone does not procure for itself another periosteum, nor does it remain alive. Ciliated epithelium once destroyed is never regenerated. Normal mucous glands do not reappear in the scar tissue which follows the destruction of mucous membrane, nor is this scar tissue capable of performing any physiologic function."

According to McGregor the ciliated epithelium of the sinuses is continuous with the squamous epithelium of the skin. Mosher says that the epithelium makes every effort to reform. Fisher found that cultures of epithelial tissue double their size in three or four days. Proetz thinks that many times the cilia regenerate along with the epithelium after a radical sinus exeneration.

Dogs have been used in the experimental work by Coates, Ersner, Knowlton, McGregor and Hilding. Their experiments are reported and discussed.

Tornndorf in 1928 reported the case of a radical antrum operation dying one month later from an abscess of the liver. Autopsy showed granulation tissue covering all the antrum and ciliated columnar epithelium growing in from the naso-antral opening.

Latta and Schall reported evidence of rapid regeneration of the lining of an antrum which had undergone a radical exeneration twenty-four days previously. At this time there were present basal cells which were capable of becoming either ciliated or goblet cells.

Semenov concluded after due observation on human beings that the regenerated mucous membrane always contained scar tissue but even this substitute for the normal mucous membrane was better than the presence of diseased mucous membrane containing polyps, cysts, abscesses, etc.

Goodyear stated that after a Caldwell-Luc operation, fibrous tissue occurred and that the scar tissue became covered with ciliated columnar epithelium.

McGregor observed twenty-four antrums and two frontal sinuses after radical operation. He reported twenty-five ciliated. The operation had attempted to remove all the mucous membrane. Sixteen days to nine years was the elapsed time from operation. At sixteen days there were many fibroblasts; at six months from operation there was a continuous layer of epithelium; at two years from operation there was a three-layered ciliated epithelium.

Gorham and Backer through naso-antral openings removed specimens for biopsy by means of a nasopharyngoscope from human beings. Two weeks from operation, the lining of the sinus is red and uneven; one month from operation, the lining is paler and smoother; three to five months from operation, the lining is relatively smooth, glistening, pale pink, with capillaries visble.

Macroscopically and microscopically the general inference is that the lining of the paranasal sinuses is regenerated after radical exeneration, including the ciliated epithelium. This requires about three to five months time. The regeneration may not all take place from the nasal mucosa but may also come from the buccal mucosa.

A Method for the Correction of Entropion in Trachomatous Patients. Archimede Busacca, M.D. Sao Paulo, Brazil. Archives of Ophthalmology, November, 1936.

According to the author trachoma causes about fourteen per cent of the eye disorders in Brazil. He believes that he has an outline that will produce a clinical cure of trachoma. By clinical cure he means that the trachoma is not active. He thinks that probably the disease remains present in the latent stage even though a biopsy shows perfect cicatrization.

For five years several hundreds of cases have been treated by this method. When recurrences occur, a brief course of treatment clears the condition. He removes the superior tarsal bundles of the orbicularis muscle when the inflammatory process has stopped. He gives his explanation and therapy of this procedure.

Following is the author's outline for the operation:

1. Anaesthesia is produced, and the skin is incised in a line parallel to the free border of the lid about five mm. above it.
2. The skin is pulled inward by the thumb and freed to the height of the superior margin of

the tarsus with small incisions; then at this level an incision of the muscle is made through its thickness down to the tarsal plate.

3. The distal side of the cutaneous flap is freed inferiorly down to the cilia, and a small zone of the tarsus is denuded close to them.
4. All the muscular bundles between the superior and the inferior incisions of the muscle are removed with the scissors.
5. A linear incision is made on the tarsus about five to eight mm. from and parallel to the free border of the lid, care being taken not to reach the conjunctiva. Then thin slices of the tarsus are removed with the knife, from the cilia up to the tarsal incision, so that a small furrow-like incision will be formed in this region.
6. The inferior lip of the wound is sutured to the superior side of the tarsal flap, after it is assured that the suture will not pass between the cilia.

These different steps are illustrated with accompanying drawings.

The distance the skin incision is made from the margin of the lid depends on the condition of the lids. Incision too close to the margin of the lid will not give the necessary furrow or sinking in. Incision too far from the margin will produce a poor cosmetic effect.

If the skin incision has been made correctly it then serves as a guide for the distance at which the tarsal infection should be made. The correct position of the cilia must here be considered.

In the thinning of the tarsus the knife is directed perpendicularly against the tarsus directly behind the line of the cilia and then inclined about ninety degrees so that the edge is directed toward the line of incision already made on the tarsus. Care should be taken not to injure the roots of the cilia. The inferior lip of the wound should be sutured to the tarsal flap, using about five sutures; the superior lip of the flap is left alone.

Bandaging, indications for intermarginal incision, indications for the canthoplasty and a few other points are discussed in the closing of this original article.

Rupture of the Tympanic Membrane by Lightning. Dr. Horst Wullstein, (Prof. J. Zange's Clinic), Jena. Munchener Medizinische Wochenschrift, xx, May 15, 1936, 802. Abstracted by G. H. Bateman in the September, 1936, Edition of The Journal of Laryngology and Otology.

On June 24, 1935, a girl, age 14 years, was working in the fields when she was struck by lightning and rendered unconscious. This girl had no previous history of middle-ear disease. She remained unconscious for a quarter of an hour and on recovering she had a hot burning feeling in the body and the hair on the right side of the scalp was burnt. She had a wound on the right side of the head. On the first day she vomited once and complained of vertigo in the next few days. Immediately after the accident she complained of earache and was given some ear drops. Two days later the ear began to discharge. Deafness was noticed.

November 18, 1935. The girl showed scars on the wounded areas, and there was some purulent secretion in the right external auditory meatus. There was a large central perforation blocked by a polyp. There was some middle-ear deafness and slight lowering of the upper tone limit. Labyrinth tests showed no abnormality. There were slight alterations in the reflexes, those on the right being stronger than on the left. These changes were taken to be due to the lightning

Doubt arose as to whether the perforation had been present before the accident. However, Prof. Zange had seen the patient on July 17, 1935, and had then observed a recent perforation. This was taken to remove the possibility of the perforation being present before the accident because of the absence of a history of ear symptoms.

There is only one convincing case previously reported in the literature and that is by Urbantschitsch, Monatsschrift fur Ohrenheilk, 59 Jg. 956, 1925.

INTERNAL MEDICINE

Edited by C. E. Bradley, M.D., Medical Arts Building, Tulsa; Hugh Jeter, M.D., 1200 North Walker, Oklahoma City

By HUGH JETER, M.D., F.A.C.P., A.S.C.P.

A Standardized Technique for the Blood Sedimentation Test. By M. M. Wintrobe, M.D., Ph.D. and J. Walter Landsberg, Ph.Gl., B.Sc., Baltimore, Md. The American Journal of the Medical Sciences, Vol. 189, No. 1, January, 1935.

In this the authors call attention to the various practical points, sources of errors and different methods of sedimentation rate and recommend a test which in a manner standardizes the technique.

EFFECT OF ANTICOAGULANT. Reports of other investigators are reviewed and as a result of additional experimental data performed, it is concluded that a mixture of six mg. of ammonium oxalate and four mg. of potassium oxalate added to five cc. of blood is a satisfactory anticoagulant.

INFLUENCE OF BORE AND LENGTH OF TUBE. The length of the column of blood seems to have a greater influence upon the sedimentation than does the bore of the tube, except on tubes that are less than two mm. in internal diameter, the latter giving unsatisfactory results.

INCLINATION OF THE TUBE. Attention is called to the fact that this has been demonstrated to be an important factor and further experimentation confirms this conclusion. An inclination of as little as 2.3° causes an acceleration of thirty per cent.

EFFECT OF TEMPERATURE. This also proved to be an important factor. However, it is concluded that if the test is performed in the ordinary room temperature of the laboratory, the rate will be within practical limits of percentage of error.

CHANGES IN SUSPENSION STABILITY OF BLOOD as influenced by delay in carrying out the test was thoroughly investigated and it was found that after four hours, significant differences in the results may occur.

THE FOLLOWING FACTORS appear to exert no significant influence on sedimentation rate: (1) the specific gravity of the red corpuscles themselves, or their size, (2) aeration of the blood or loss of carbon dioxide; (3) the collection of blood from arteries or veins; (4) centrifuging blood and subsequently remixing the cells and plasma; (5) the ingestion of food, and (6) short violent exercise.

CONCENTRATION OF THE SUSPENSION. Considerable attention was paid to the concentration of the suspension. Attention is called to the fact that it has been repeatedly demonstrated that the concentration of the blood or the relation of cell volume to volume of plasma is a very important factor in influencing the sedimentation rate. The more dilute the blood the greater being the speed of settling. This, of course, applies in a prac-

tical manner to cases of various degrees of anemia, polycythemia, hydremia, etc.

SEDIMENTATION RATE IN NORMAL ADULTS. In this connection the authors collected a large amount of blood from thirteen normal men and eight normal women and carried out the tests under six to nine different dilutions in each sample, and with sedimentation rate ranging from one to 98.5 mm. in one hour and the volume of packed red cells ranging from 52.5 to 1.5 cc. per 100 cc. of blood.

The tube used and recommended by these men is a hematocrit tube 110 mm. in length and three mm. in internal diameter. There are two scales, one which gives the sedimentation rate and the other, the volume of packed erythrocytes. In view of the fact that the greater the dilution of blood, the more rapid is the rate and vice versa. The authors have combined data and provided a chart which corrects the sedimentation rates for variations resulting from the temperature in concentration of red corpuscles as measured by volume of packed red cells. As a result by this method, a combined test is performed which gives not only the sedimentation rate, but the rate corrected according to cell volume and also the actual percentage of cells to the total volume of blood. The volume of white cells and platelets as well as the icterus index tests, may also be performed in connection with the procedure.

Several practical deductions are made as follows: Normal females have a higher average rate ranging from one to twenty mm. per hour and it also is significant that females show more fluctuation in the rate than do males. The range for normal men is one to ten mm.

Various observations seem to indicate that menstruation does not cause the rate to go beyond normal limits.

Interesting charts are given. The chart for correcting sedimentation rate for variation resulting from differences of concentration of red corpuscles is necessary for computing the actual result of this test.

COMMENT: The sedimentation test has proven to be of very definite value in many different types of disease. It has been extremely unfortunate that many different methods have been used and the many sources of error have not been consistently evaluated. This step toward standardization of a method is a very valuable contribution and the various factors which have been studied will contribute substantially to the reliability of the various methods which are in common use.

SURGERY AND GYNECOLOGY

Abstracts, Reviews and Comments from LeRoy Long Clinic
714 Medical Arts Building, Oklahoma City

Carcinoma of the Body of the Uterus. By Charles C. Norris and F. Sidney Dunne, Philadelphia, Pa. The American Journal of Obstetrics and Gynecology, December, 1936, Page 982.

This is a report of two hundred and seventy-nine patients with carcinoma of the uterine body admitted to the hospital of the University of Pennsylvania from January 1, 1900, to January 1, 1935. Two hundred and eleven of these patients were admitted five or more years before 1935 and these form the basis of the five year results. Of these eighty-one per cent have been followed and all untraced patients are regarded as having died of carcinoma.

Though carcinoma of the fundus is often considered a post-menopausal disease, in this series 30.5 per cent were in the pre-menopausal age.

The condition was about as prevalent in those who had borne children as in those who had not. "Child bearing plays no part in the pre-disposition to fundal carcinoma."

"The chief symptoms are bleeding and discharge. Metrorrhagia was the first symptom noticed in 80.5 per cent of the cases."

The authors' conclusions are as follows:

"The average duration of symptoms was 17.9 months. If myomas and fundal carcimona were associated, the average duration of symptoms was 21.8 months.

"Only 43.8 per cent of patients sought treatment prior to one year after the onset of symptoms.

"The pre-operative diagnosis was positive in 67.9 per cent of cases, suspected in 16.6 per cent, and unsuspected in 15.5 per cent.

"All uteri removed for what are believed to be benign lesions should be opened and the endometrial cavity inspected before the operation is completed.

"Diagnostic curettage is the most certain method of detecting the presence of early fundal carcinoma and may be relied upon in practically all cases.

"The association of myomas and fundal carcinoma occurred in 34.9 per cent of our cases.

"Of thirteen patients with involvement of the ovary, treated five or more years ago, six survived the five-year period, and in fourteen cases in which the parametrium was invaded, three survived the five year period.

"For uncomplicated cases, a radical panhysterectomy and bilateral salpingo-oophorectomy, followed by deep roentgen therapy, is the treatment of choice.

"When curettage is performed in a suspected case, a minimum of 1,200 mg. hours of radium irradiation should be employed. If broken-up particles of carcinoma are left behind in the uterus, the irradiation tends to prevent dissemination, and if the case proves to be benign, bleeding is checked.

"The five-year salvage in patients treated by hysterectomy was 47.8 per cent.

"The five-year salvage in patients treated by radium alone was 43.8 per cent.

"The operative mortality for the series was 3.4 per cent.

'In the patients treated by hysterectomy, the operative mortality was 4.3 per cent, and in patients treated by radium, it was 2.2 per cent.

"The absolute five-year salvage in the entire series was 44.5 per cent, and the relative five-year salvage was 46.1 per cent."

In the body of the article there is no statistical reason for the preference of following radical panhysterectomy by deep roentgen therapy as the treatment of choice, nor is there any statistical reason for introducing 1200 milligram hours of radium irradiation (an insufficient dosage for cure) in suspected cases.

COMMENTS: The preferable treatment for this disease in the minds of all, includes radical complete hysterectomy and bilateral salpingo-oophorectomy. The value of x-ray and radium therapy as an adjunct is a question that has as yet not been determined. If radium or x-ray are employed preoperatively, they should be used in sufficient dosage to destroy neoplastic tissue and operation should not be attempted, principally because of technical difficulties, until at least four weeks

after the termination of the irradiation treatment. If post-operative irradiation is employed, the agency is naturally limited to roentgen therapy. Though there is no actual evidence to prove that this increases the cure rate, it is probably well to use it in order to feel that one has done everything possible to remove the malignancy and to destroy any possible residual cancer cells. However, it is well to remember that the fundamental feature of the preferable treatment for this disease is removal of the entire uterus and both uterine adnexa. This is naturally limited in application to the fairly good operative risk.

If those in whom there is a definite contraindication to operation, radium and x-ray therapy produce surprisingly good results, though not quite as good as by the method of complete hysterectomy.

Because the positive diagnosis of carcinoma of the uterine fundus is so frequently made from curettings, it is well to call attention to the fact that in obtaining the curettings, all areas of the uterine cavity should be curetted and in examining the tissue various levels of the paraffin block should be cut in order not to miss small isolated areas of malignant tissue. Wenedil Long.

The Gynecologic Aspect of Human Sterility. By Samuel R. Meaker, Boston. The Journal of the American Medical Association, December 5, 1936. Page 1847.

The recent advances in diagnosis and treatment of sterility rest upon a better understanding of its etiology, and these new ideas may be reduced to three fundamental principles:

"First, in the great majority of cases of human infertility the cause of that defect is not some single abnormality but rather the summation or totality of several factors. Complete diagnostic studies show that the average childless couple presents 4.79 factors, each of which diminishes to some extent their capacity for conception." "Seventy per cent of couples who apply for the relief of childlessness show no single condition that would account for their difficulty. They do show, without exception, a group of causative factors of which each one lowers their fertility to some extent and of which the sum total depresses that fertility below the threshold of conception."

"Second, the multiple factors just discussed are partly genital and partly constitutional." "I should perhaps add that, according to the ideas of my associates, states of constitutional depression include not only endocrine insufficiencies but also various non-endocrine conditions such as chronic intoxication, metabolism disturbances of extrinsic origin, debility and general inferiority."

"Third, the several factors present in each case are seldom limited to one partner." "Even when an absolute cause is present, there are still in the background other factors, which become operative when the more obvious impediment is removed."

These remarks make clear the complex nature of the problem and the necessity for an elaborate diagnostic approach with the employment of urologist, gynecologist, internist, and endocrinologist. There is no worse fallacy than accepting the first discovered abnormality as the sole and only cause in a given patient.

He divides the gynecological factors of infertility into four important groups, excluding the rareties. The first of these is female genital hypoplasia. Second, endocervical mucus so thick and tenaceous that spermatozoa are unable to penetrate it. Third partial or complete obstruction of the fallopian tubes constitutes an obvious impediment. Fourth, there is the serious matter of deficient oogenesis.

The gynecologic investigation of a sterile mating involves long series of routine procedures with particular reference to certain details that are not of great importance in ordinary gynecological cases such as: "Measurement of the uterine index, tests of tubal patency, study of the endocervical secretions, and post-coital examination."

The most obscure detail in every case of sterility is the question of defective ovulation. No method of examination has ever been sufficient to determine whether or not the ovaries actually liberate mature and normal eggs.

The method of approach to treatment is briefly summarized in the following paragraph:

"The way of treatment is clearly indicated by a complete diagnostic study. In general, one should aim to correct all the factors demonstrated as inimical to fertility. A multiple therapeutic approach gives results far better than those obtained in older days, when treatment was limited to one or two items. It does not follow, however, that complete treatment should be undertaken from the start since good judgment often dictates the wisdom of eliminating certain factors before others are attacked. Notably, it is essential to assure an adequate grade of male fertility before subjecting a wife to any therapeutic measures directed primarily against sterility."

COMMENT: During the past ten years Meaker has done much to improve our concept of this problem and he has aided greatly in establishing the systematic study, diagnosis and treatment of these patients. This article does not deal with the particular features of investigation, but summarizes the broad principles which cannot be forgotten if one is to obtain results. In so complex a study as that of a sterile mating, great detail is necessary but there is also the danger of being engulfed in detail to such an extent that the broad principles are obscured. Wendell Long.

Simple Cyst of the Liver. Report of a Case. By Harry J. Warthen, Richmond, Virginia, and V. H. Griffin, Nashville, Tennessee. Southern Medical Journal, December, 1936. Page 1178.

A negro woman thirty-eight years of age was admitted to hospital November 14, 1934, because of a greatly enlarged abdomen. The history indicated that the illness had begun February 10, 1934, when there was pain in the right chest, and evidences of a respiratory tract infection. About a week later there was noticeable enlargement of the abdomen which progressively and rapidly increased during the next four or five days. There was neither nausea nor vomiting. There was no abdominal pain. The chief complaint, subjectively, was weakness.

The family history was negative. The entire life had been spent in Virginia and New Jersey.

On admission there were evidences of considerable loss of weight, the mucous membranes were pale, the blood pressure 145/100, the hemaglobin percentage 38 (Sahli) and a red blood count of 3,440,000.

The abdomen was greatly distended by a mass, tense and dome-shaped, extending from the costal margin to the pelvis. The surface was smooth and symmetrical, with the exception of a smaller rounded mass in the upper left quadrant of the abdomen.

The provisional diagnosis was intra-abdominal cyst, probably arising from the right ovary.

At operation a large smooth cyst was encountered, the anterior wall being thin, tense, white, with mottled areas of blue. It was not adherent

to the parietal peritoneum, and was found to extend upward and to be continuous with the under surface of the right lobe of the liver.

When lifted out of the abdomen it was found that there were numerous adhesions of the posterior wall to the small intestines. A hole was accidentally made in the ilium. In order to facilitate the dissection, a trocar was introduced and 4,950 cc. of reddish brown fluid withdrawn without completely evacuating the cyst, the aspiration being hindered by the presence of a friable gray grumous material on the inside of it.

The wounded ilium was repaired and the cyst wall separated from the intestines. The upper portion of it was surrounded by "thin lappets of liver tissue over an area about twenty-five cm. in diameter." A line of cleavage was found and the cyst wall was completely removed, followed by moderate capillary oozing. There was no pedicle. Apparently the blood supply was secured through numerous small vessels from the structures adhering to it. Two small cigarette drains were placed in the defect on the under surface of the liver.

Following the operation, there was a transfusion of five hundred cc. of blood.

The pathological diagnosis was "a cyst of undetermined etiology, having a fibrous wall, presenting a chronic inflammatory response."

Appropriate laboratory procedures did not demonstrate pyogenic organisms, tuberculosis, hooklets or echinococci.

The convalescence was satisfactory, the patient being discharged twenty days after operation.

It appears that simple cysts of the liver are rarely encountered. The etiology is uncertain. It is suggested that they might be of biliary or lymphatic origin. Altogether, the authors do not seem to be very clear with reference to their conception of the etiology, but their report in the case indicates clever and skillful technical procedure in connection with the operation. LeRoy Long.

Bilateral and Medial Aberrant Thyroid. By Harry C. Schmeisser, Memphis, Tennessee. Southern Medical Journal, December, 1936. Page 1174.

The definition of an aberrant thyroid by Schrager, in 1906, is quoted by the author:

"An aberrant thyroid is a mass of tissue having the structure of a normal or pathological thyroid gland and situated at some definite distance from the normal thyroid with which it has no connection."

There is a reference to Wolfler's division of aberrant thyroid tissue into two groups, one group arising from the medial anlagen; the other group arising from the lateral anlagen. The first group was reviewed by Wegelin in 1926, and the second group was reviewed by Moritz and Bayless in 1932. Wegelin found that the first group (those arising from the medial anlagen) might develop along the course of a thyroglossal duct, and that sometimes they are found behind the trachea or oesophagus.

It appears that bilateral aberrant thyroids are uncommon, and that a combination of bilateral and medial aberrant thyroid is still more uncommon. The author has observed this combination, and the following is a brief synopsis of the case reported:

A married white woman, twenty-five years of age, entered hospital because of an enlargement of the neck. At the age of thirteen she had noticed a knot on the anterior surface of the neck. Three or four years later there were some enlargements on the right side of the neck, and a little later some on the left side. There was neither pain nor tenderness, but some discomfort from pressure.

The enlargements were discreet, and of various sizes. They appeared to be beneath platysma, but superficial to the deeper muscles, with the exception that on the left side of the neck they were partly covered by the sternocleidomastoid muscle. They were found both laterally and medially. One of the masses was removed for examination. The histological structure was characteristic of thyroid tissue.

In the case of the patient reported, the basal metabolic rate was normal on successive occasions. The principal difficulty seemed to be in connection with pressure from the various enlargements on the sides and on the front of the neck.

Operation was done in two stages. At the first operation the masses on the right side of the neck, all of them being immediately beneath the platysma, were removed. At a subsequent operation the masses in the front of the neck and on the left side were removed. Histological studies confirmed the clinical diagnosis of aberrant thyroids.

Based upon his investigation, the author concludes that these tumors appear in early life, the majority of them reporting for treatment in the third decade, but with a pre-operative existence of the tumors for about eleven years; that the ratio of males to females was one to three; that the tumors were more frequently on the right side, and in about fifteen per cent of the patients they were bilateral.

Cattell is quoted as making the statement that the diagnosis of lateral aberrant thyroids is rarely made before operation, and that no positive diagnosis can be made without biopsy.

LeRoy Long.

Local Medication of Upper Respiratory Tract

Clyde A. Heatly, Rochester, N. Y. (Journal A. M. A., December 5, 1936), declares that the use of local medications by the general practitioner in the treatment of diseases of the upper respiratory tract should be restricted for the most part to acute infections. It is to be emphasized that attempts to treat chronic disorders by such measures are fraught with serious danger until the diagnosis of the underlying pathologic condition has been thoroughly established. This as a rule requires examination by a specialist in this field. All too frequently cases are encountered in which local medications have been carried out over long periods before a serious underlying infection or new growth has been discovered. The resulting loss of time commonly leads to serious or even fatal consequences. In the early stages of acute pharyngitis the local application of silver nitrate (from five to twenty per cent), mild protein silver (ten or twenty per cent) or Mandl's solution often gives relief. Vigorous swabbing, however, should be avoided. Gargles, so frequently prescribed, are often useless, especially in children, because the contraction of the tongue and pharyngeal muscles prevents the solution from reaching the inflamed parts. They may, however, be used in the form of salt and soda, one-half teaspoonful each in a glass of warm water or Dobell's solution, 2 tablespoonfuls in a glass of warm water. In the more severe infections the use of hot salt and soda irrigations will be more effective. Lozenges containing small quantities of menthol, camphor, guaiac and codeine, orthoform tablets or calcidin-anesthesin troches lessen the discomfort in mild cases. In acute tonsilitis the most effective local treatment consists in irrigation of the throat every two hours with a warm solution containing one teaspoonful of sodium chloride and sodium bicarbonate in one pint

of water. Warm dextrose solution (fifty per cent) made with "Corn Syrup" one part and water two parts is also effective. When irrigations are not possible nor well tolerated a similar warm solution of salt and soda, potassium permanganate (1:5,000 solution) or acetylsalicylic acid (five tablets crushed in a glass of water) may be used as a gargle. The practice of frequent and vigorous swabbing is dedecidedly not recommended. In the common acute infectious disease fusospirochetal angina silver nitrate (from ten to twenty per cent), tincture of iodine, chromic acid (five per cent), copper sulfate (ten per cent), gentian violet, methylene blue, acriflavine base and mercurochrome have all been uesd successfully. The therapeutic indications in acute laryngitis require the control of inflammation, the release of spasm and the relief of obstructive dyspnea. Steam inhalations to which compound tincture of benzoin (one teaspoonful to a pint of water) is added constitute the most helpful local treatment. Menthol (0.65 Gm.) may be similarly employed. These may be given directly at three hour intervals and a steam kettle should be kept going constantly in the room. Few ear conditions are suitable for treatment by the general practitioner. In acute external otitis (boils) the external auditory canal may be gently cleaned with alcohol and then packed lightly with a narrow gauze wick soaked with aluminum acetate (saturated solution), ichthammol in glycerin (ten per cent) or mercresin (prescriptions E, F and G). Heat should be applied as constantly as possible and gives great relief. Vaccines may be of value in recurrent cases. Fungus infections (otomycosis) are best controlled by daily instillations of a two per cent solution of salicylic acid in alcohol (seventy per cent) together with the administration of potassium iodide by mouth. Infections caused by Bacillus pyocyaneous respond to acetic acid (two per cent solution). When earache is due to an acute catarrhal inflammation of the tympanic membrane, warm drops of phenol in glycerin (from five to ten per cent solution) repeated if necessary at three hour intervals for two or three doses often give relief.

o

Benzedrine Sulfate in Mood and Fatigue

Myerson (Arch. Neur. & Bsych., 30:816, October, 1936), suggests the use of Benzedrine Sulfate (benzyl methyl carbinamine sulfate S. K. F.) to alleviate certain types of fatigue and depression.

When administered to normals suffering from fatigue and slight malaise due to insufficient rest or sleep, immediate benefit and relief of a pleasant type were experienced. To obtain this result ten mg. upon arising was usually sufficient. The effect lasted two hours or more. A dose of thirty mg. was apt to produce restlessness and over-excitability; and sleeplessness at night following administration in the late afternoon. No ill effects and no signs of craving were noted in any of the patients. Blood pressure was not appreciably affected by ten mg., but a rise sometimes followed a twenty mg. dose, and the use of the drug in the presence of hypertension is inadvisable. As an emergency measure for normals to dissipate the effects of a disordered night's sleep or insufficient rest, the drug is probably of benefit.

Benzedrine Sulfate was also given to a group of cases suffering from neuroses associated with depression, fatigue and anhedonia. Although the difficulty of a scientific evaluation of treatment in neuroses is recognized, Benzedrine seemed to have an ameliorative effect with a definite though limited value.

In only two cases was its action unfavorable. Its effects were not curative or permanent, but it tended to lessen the depression and increase the feeling of energy. Given in small divided doses in the morning its use is suggested during treatment by other means and while natural recovery is taking place.

In eighteen cases of dementia praecox, Benzedrine Sulfate was found to be without effect on catatonic or hebephrenic states.

JUST A
REMINDER . . .

Dues become delinquent
February 1st, 1937.

Index to Advertisers

Algonquin Cruise to Atlantic City xxiii
Allergen-Proof Encasings, Inc. viii
American Can Company xxxii
Arthritis Research Laboratory vii
Balyeat Hay Fever and Asthma Clinic iii
Baum Company, Inc., W. A. viii
Bilhuber-Knoll Corporation x
Blackwell Hospital xii
Caviness Surgical Company vi
Chesterfield ..... Outside Back Cover
Classified Advertisements xvii
Coca-Cola Company xi
Cook County Graduate School of Medicine v
Duncan Laboratories xii
Duke Sanitarium ..... Inside Back Cover
Eli Lilly Company xvi
First Texas Chemical Company vi
General Electric X-Ray Corporation xxix
Goldfain Rheumatism-Arthritis Research Laboratory iii
Grandview Sanitarium xxv
Hotel Will Rogers xi
Hynson, Westcott & Dunning, Inc. iv
Karo xiii
Lain-Eastland Clinic ..... Front Cover
Mead Johnson & Company xv
Medical Arts Laboratory ..... Inside Front Cover
Merck & Co. xxx
Moody's Sanitarium, Dr. xii
Neurological Hospital xxvii
Oakwood Sanitarium v
Parke, Davis & Company xiv
Pearson School, The iv
Philip Morris & Company viii
Physician's Casualty Association xxiv
Physicians' Directory ..... xviii-xix-xx-xxi-xxii
Pogue School, The Mary E. xxvii
Polyclinic Hospital xxvi
Ralph Sanitarium xii
Reconstruction Hospital and McBride Clinic vii
Simpson-Major Sanitarium xxviii
Smith, Kline & French Laboratories xxxi
Springer Clinic, The v
Squibb & Sons, E. R. ix
Steffen's x
Storm, Katherine L., Supporter xxvi
Terrell's Laboratories ..... Front Cover
Timberlawn Sanitarium xxvii
Treatment Regulator Corporation xxv
Trowbridge Training School v
Tulane University Graduate School of Medicine xxiv
Von Wedel Clinic ..... Inside Back Cover
Wallace Sanitarium, The iv
Wesley Hospital xxviii
Western Electric Audiphone Company xxvii
White's Sanitarium, Dr. xxiv
Woodcroft Hospital Sanitarium xxiv